



Scale: 5" / 100'  
Measured Depth Log

Well Name NCLP AA07-69HNA(Horizontal)

Location SEC4-T6N-R63W

State Colorado

County WELD

Country USA

Rig Number H&P 322

API Number 05-123-39160

AFE # 141128

Region DJ BASIN

Field WATTENBERG

Spud Date 5/31/2014

Drilling Completed 6/7/2014

Surface Coordinates 40.51017, -104.45086

Ground Elevation 4708'

K.B. Elevation 4732'

Logged Interval 6100' To 13228'

Total Depth 13228'

Formation NIOBRARA B CHALK

Type of Drilling Fluid WATER/POLY/MUD

## Operator

Company Noble Energy Inc

Address 1625 Broadway Suite 2200 Denver, CO 80202

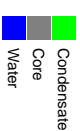
## Geologist

Name LIZ VAN DIEPEN, BRIAN SPITZMILLER

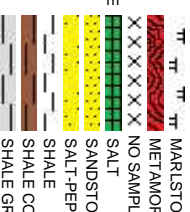
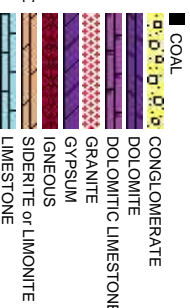
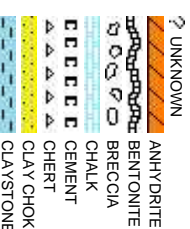
Company COLUMBINE LOGGING, INC.

Address 2385 S. LIPAN ST  
DENVER, COLORADO 80223  
(303) 289-7764

## Zone Color Coding



## Rock Types



Accessories

	GASTROPOD		ARGILLITE GRAIN		HEAVY MINERAL
	INOCERAMUS		B BENTONITE		K KAOLIN
	ALGAE		BIT BITUMENOUS SUBSTANCE		M MARLSTONE
	AMPHIPORA		B BRECCIA FRAGMENTS		M MICACEOUS
	BELEMNITE		C CALCAREOUS		M MINERAL CRYSTALS
	BIOCLASTIC		C CARBONACEOUS FLAKES		N NODULES
	BRACHIOPOD		CHT CHLT		P PHOSPHATE PELLETS
	BRYOZOA		CHT CHLT		P PYRITE
	CEPHALOPOD		C COAL - THIN BEDS		S SALT CAST
	CORAL		D DOLOMITIC		S SANDY
	CRINOID		F FELDSPAR		S SILTY
	ECHINOID		F FERRUGINOUS PELLET		T TUFFACEOUS
	FISH		F FERRUGINOUS		
	FORAMINIFERA		G GLAUCONITE		
	F FOSSIL		G GYPSIFEROUS	<b>Stringer</b>	

Other Symbols

	P PINPOINT		DST INTERVAL		WIRELINE TESTED - LEFT		E EARTHY
	V VUGGY		FAULT		WIRELINE TESTED - RT		F FINELYXLN
	D DEAD		FORMATION TOP		D DRILL STEM TEST		G GRAINSTONE
	E EVEN		GAS SHOW		MN DEPTH		L LITHOGRAPHIC
	Q QUESTIONABLE		OIL SHOW		MN DEPTH		M MICROXLN
	S SPOTTED STAINING		CONNECTION (UP)		R		M MUDSTONE
	CONNECTION (DOWN)		MN DEPTH (DOWN)		A ANGULAR		P PACKSTONE
	Porosity		NORMAL FAULT		S SUBANG		W WACKESTONE
	E EARTHY		OVERTURNED STRATA		S SUBANG		
	F FENESTRAL		REVERSE FAULT		S SUBANG		
	F FRACTURE		CASING		S SUBANG		
	X INTERCRYSTALLINE		SIDEWALL CORE (LEFT)		Textures		M MODERATE
	X INTERCRYSTALLINE		SIDEWALL CORE (RIGHT)		Textures		P POOR
	X INTERCRYSTALLINE		SLIDE		Textures		W WELL
	X INTERCRYSTALLINE		SURVEY		Textures		C CRYPTOXLN

Fossils

	GASTROPOD		ARGILLITE GRAIN		HEAVY MINERAL
	INOCERAMUS		B BENTONITE		K KAOLIN
	ALGAE		BIT BITUMENOUS SUBSTANCE		M MARLSTONE
	AMPHIPORA		B BRECCIA FRAGMENTS		M MICACEOUS
	BELEMNITE		C CALCAREOUS		M MINERAL CRYSTALS
	BIOCLASTIC		C CARBONACEOUS FLAKES		N NODULES
	BRACHIOPOD		CHT CHLT		P PHOSPHATE PELLETS
	BRYOZOA		CHT CHLT		P PYRITE
	CEPHALOPOD		C COAL - THIN BEDS		S SALT CAST
	CORAL		D DOLOMITIC		S SANDY
	CRINOID		F FELDSPAR		S SILTY
	ECHINOID		F FERRUGINOUS PELLET		T TUFFACEOUS
	FISH		F FERRUGINOUS		
	FORAMINIFERA		G GLAUCONITE		
	F FOSSIL		G GYPSIFEROUS	<b>Stringer</b>	

Minerals

	FISH		T TUFFACEOUS
	FORAMINIFERA		G GLAUCONITE
	F FOSSIL		G GYPSIFEROUS

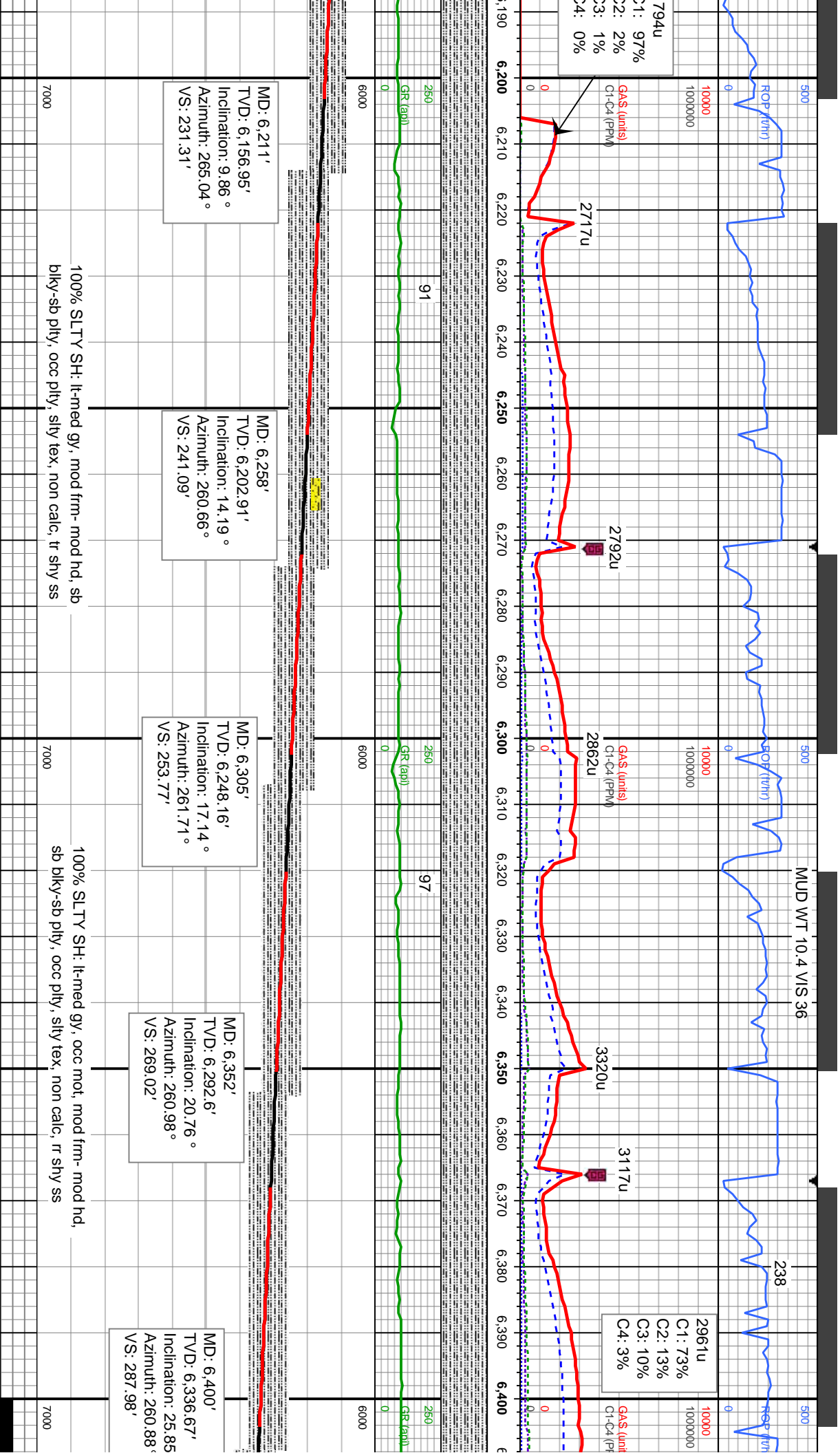
Stringer

	ANHYDRITE STRINGER
	B BENTONITE STRINGER
	C COAL STRINGER
	D DOLOMITE STRINGER
	G GYPSUM STRINGER
	L LIMESTONE STRINGER
	M MARLSTONE (CALC) STRG
	M MARLSTONE (DOL) STRG
	S SANDSTONE STRINGER
	SH SHALE STRINGER
	S SILTSTONE STRINGER

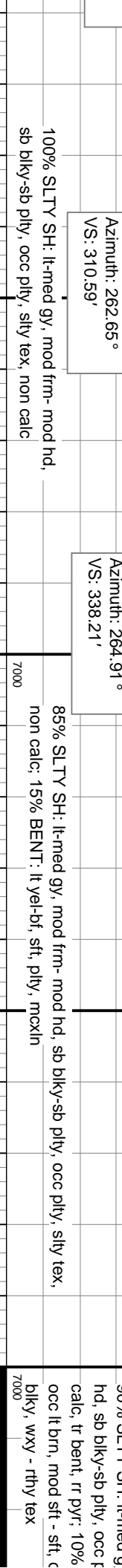
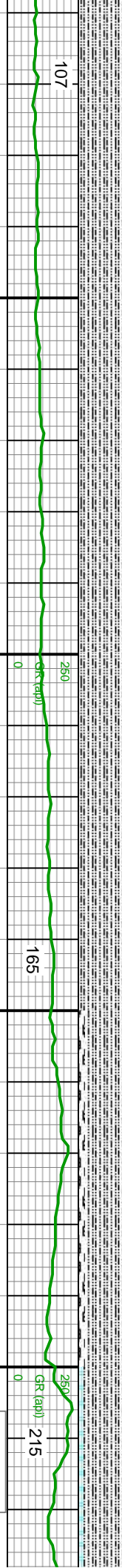
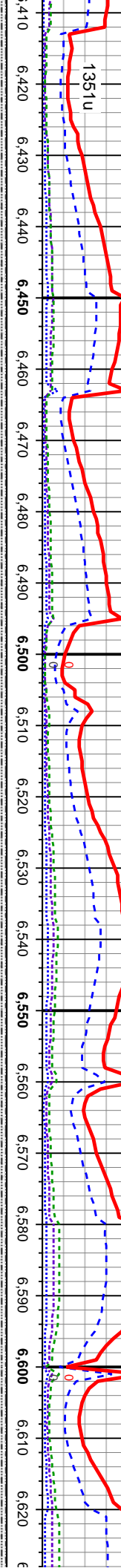
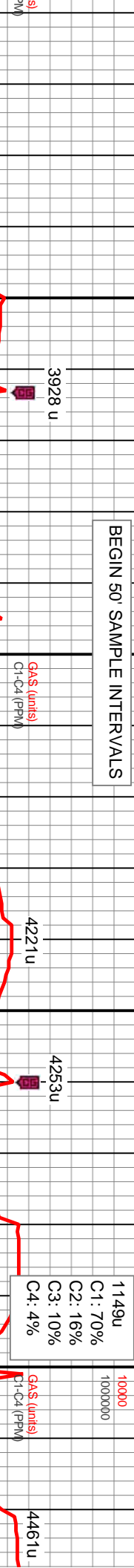
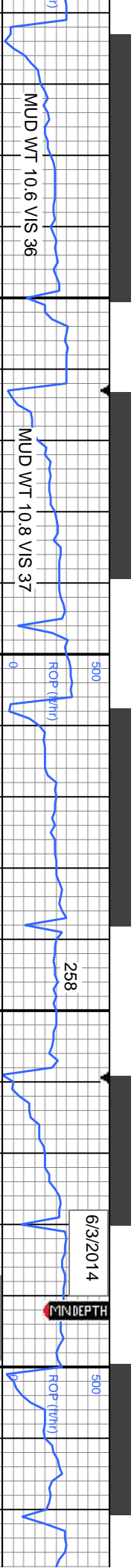
Gas  
Pressure  
Seal

	SHALY SANDSTONE
	SHALY SILTSTONE
	SILTY SHALE
	SILTSTONE
	TUFF
	WELDED TUFF









BEGIN 50' SAMPLE INTERVALS

1149u  
C1: 70%  
C2: 16%  
C3: 10%  
C4: 4%

MD: 6,542'  
TVD: 6,452.5'  
Inclination: 43.54°  
Azimuth: 266.24°  
VS: 369.05'

MD: 6,590'  
TVD: 6,486.21'  
Inclination: 47.21°  
Azimuth: 266.01°  
VS: 403.17'

LOGGERS  
TOP:  
SHARON  
SPRINGS  
6610' MD  
6501' TVD

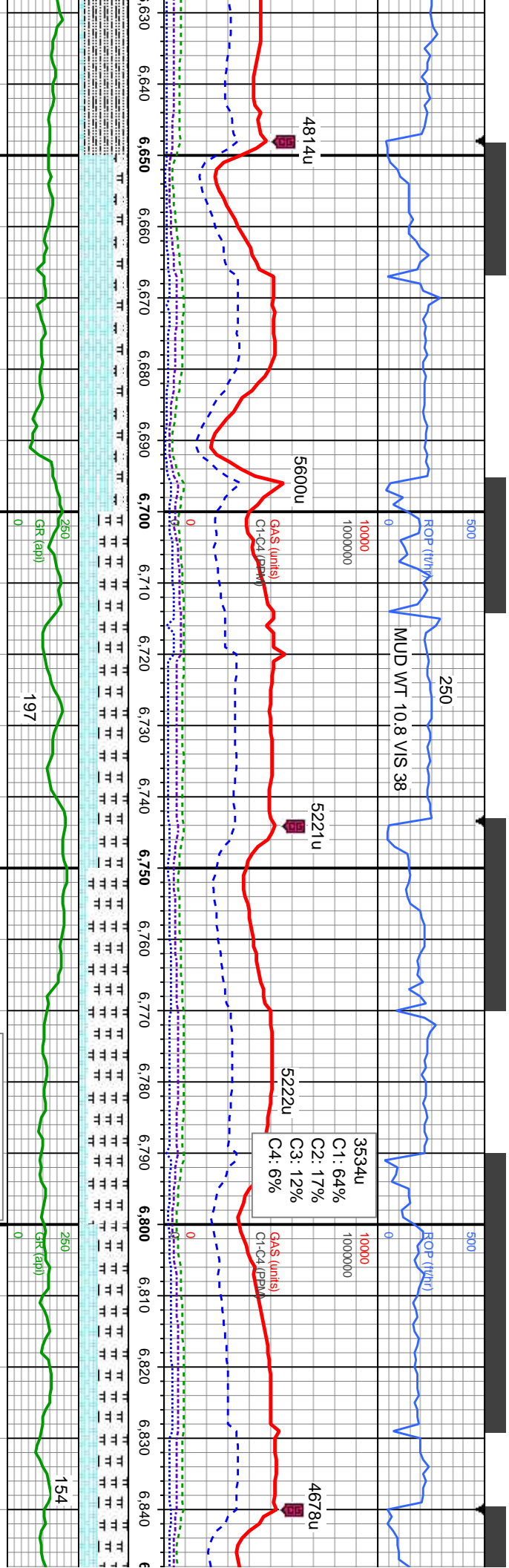
MD: 6,447'  
TVD: 6,377.85'  
Inclination: 31.72°  
Azimuth: 262.65°  
VS: 310.59'

MD: 6,495'  
TVD: 6,417.07'  
Inclination: 38.59°  
Azimuth: 264.91°  
VS: 338.21'

100% SLTY SH: lt-med gy, mod frm- mod hd,  
sb blk-y-sb pty, occ pty, silty tex, non calc

85% SLTY SH: lt-med gy, mod frm- mod hd, sb blk-y-sb pty, occ pty, silty tex,  
non calc; 15% BENT: lt-yel-bf, sft, pty, mcxn

90% SLTY SH: lt-med gy  
hd, sb blk-y-sb pty, occ f  
calc, tr bent, rr pyr; 10%  
occ lt brn, mod sft - sft, c  
blk-y, wxy - rthy tex



LOGGERS

TOP: NIO A

CHALK

6662' MD

6537' TVD

MD: 6,685'

TVD: 6,547.58'

Inclination: 52.34 °

Azimuth: 270.11 °

VS: 475.28'

LOGGERS

TOP: NIO B

CHALK

6820' MD

6625' TVD

MD: 6,827'

TVD: 6,625.16'

Inclination: 64.17 °

Azimuth: 269.09 °

VS: 593.38'

70% CHK: lt gy - gy, sft - mod sft, occ frm, blkly - sb blkly, wxy - rthy tex; 20% MRLST: dk brn, dk gy brn, mod sft-si frm, sb blkly-sb ply, rthy-sily tex, sl mot, occ si vit lsfr, v calc; 10% SLTY SH: lt-med gy, mod frm - mod hd, sb blkly-sb ply, occ ply, sily tex, non calc

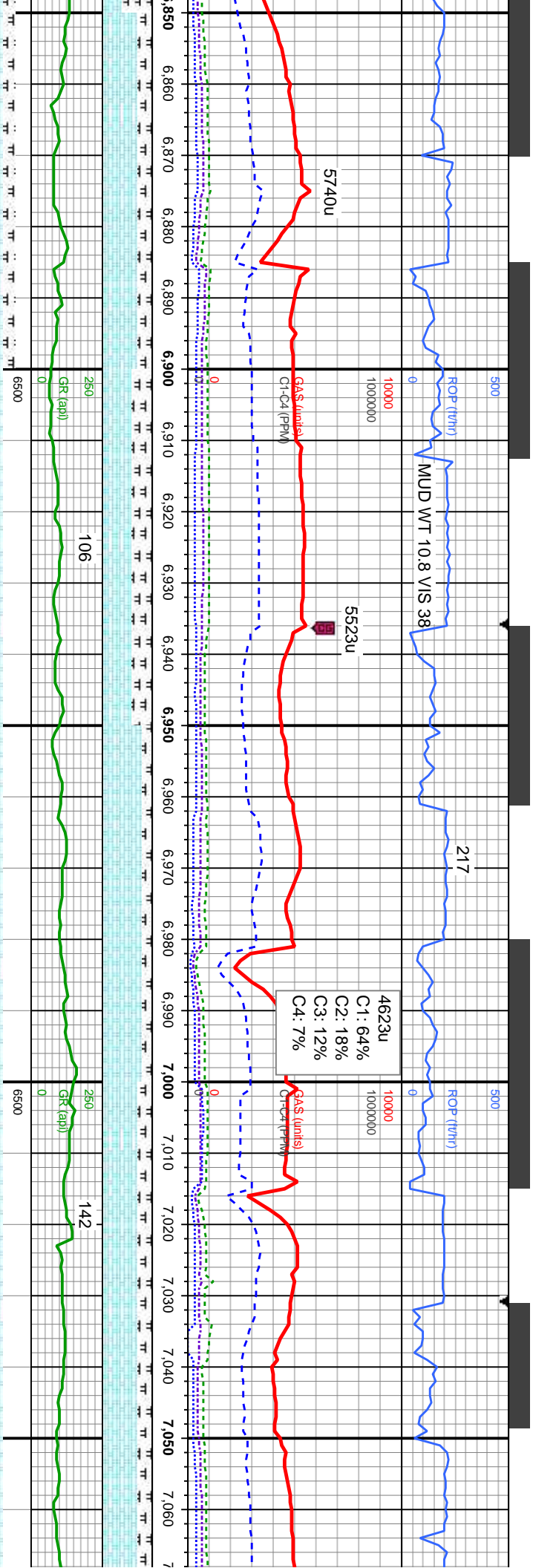
60% MRLST: dk brn, dk gy brn, mod sft-si frm, sb blkly-sb ply, rthy-sily tex, sl mot, occ si vit lsfr, v calc; 40% CHK: lt gy - gy, sft - mod sft, occ frm, blkly - sb blkly, wxy - rthy tex

80% MRL: dk brn, dk gybrn, mod sft-si frm, sbblkly-sbply, rthy-sily tex, sl mot, occ si vit lsfr, v calc; 20% CHK: lt gy - gy, sft - mod sft, occ frm, blkly - sbblkly, wxy - rthy tex

60% MRL: dk brn, dk gybrn, mod sft-si frm, sbblkly-sbply, rthy-sily tex, sl mot, occ si vit lsfr, v calc; 40% CHK: lt gy - gy, sft - mod sft, occ frm, blkly - sbblkly, wxy - rthy tex







MD: 6,875' TVD: 6,644.16' Inclination: 69.17 ° Azimuth: 270.09 ° VS: 637.19'	MD: 6,922' TVD: 6,659.46' Inclination: 72.83 ° Azimuth: 270.76 ° VS: 681.29'	MD: 6,970' TVD: 6,671.8' Inclination: 77.36 ° Azimuth: 271.45 ° VS: 727.25'	MD: 7,015' TVD: 6,679.54' Inclination: 82.83 ° Azimuth: 272.24 ° VS: 771.09'
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70% CHK: lt gy - gy, sft - mod sft, occ frm, blkly - sbblkly, wxy - rthy tex; 30% MRLST:dk brn, dk gybrn, mod sft-sl frm, sbblkly-sbply, rthy-sily tex, sl mot, occ sl vit lstr, v calc,rr fos	60% CHK: lt gy - gy, sft - mod sft, occ frm, blkly - sb blkly, wxy - rthy tex; 40% MRLST:dk brn, dk gy brn, mod sft-sl frm, sb blkly-sb ply, rthy-sily tex, sl mot, occ sl vit lstr, v calc,rr fos	80% CHK: lt gy - gy, sft - mod sft, occ frm, blkly - sb blkly, wxy - rthy tex; 20% MRLST:dk brn, dk gy brn, mod sft-sl frm, sb blkly-sb ply, rthy-sily tex, sl mot, occ sl vit lstr, v calc,rr fos	70% CHK: lt gy - gy, sft - mod sft, occ frm, blkly - sb blkly, wxy - rthy tex; 30% MRLST:dk brn, dk gy brn, mod sft-sl frm, sb blkly-sb ply, rthy-sily tex, sl mot, occ sl vit lstr, v calc,rr fos
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6/4/2014

MINDEPTH

500  
10000  
1000000

TOOH for 7 Casing @ 7073MD, 0500 hrs 06/03/14. Resumed Drilling 1508 hrs 06/04/14

GAS (units)  
Cl-C4 (PPM)

WITS CORD DAMAGED

2564u  
C1: 62%  
C2: 18%  
C3: 13%  
C4: 7%

GAS (units)  
Cl-C4 (PPM)

2002u

PASON COMPUTER REPLACEMENT

7,070 7,080 7,090 7,100 7,110 7,120 7,130 7,140 7,150 7,160 7,170 7,180 7,190 7,200 7,210 7,220 7,230 7,240 7,250 7,260 7,270 7,280

250  
0

60 (gpp)

134

250  
0

60 (gpp)

132

MD: 7,166'

TVD: 6,692.31'

Inclination: 87.47°

Azimuth: 274.17°

VS: 919.34'

TVD (ft)

gy-med gy, sft-mod sft, occ  
/, wxy-rthy tex, 30-40%  
dk gy brn, mod sft-sl frm,  
rthy-sily tex, sl mot, v calc,

60% MRLST: dk brn, dk gy brn, mod  
sft-sl frm, sb biky-sb pily, rthy-sily tex,  
sl mot, v calc 40% CHK: lt gy-med gy,  
mily, sft-mod sft, occ frm, biky-sb biky,  
wxy-rthy tex, abnt bent

60% CHK: lt gy-med gy, mily, sft-mod  
sft, occ frm, biky-sb biky, wxy-rthy tex;  
40% MRLST: dk brn, dk gy brn, mod  
sft-sl frm, sb biky-sb pily, rthy-sily tex, sl  
mot, v calc, abnt bent, rr inoc fos

TVD (ft)

80% CHK: lt gy-med gy, mily, sft-mod  
sft, occ frm, biky-sb biky, wxy-rthy tex;  
20% MRLST: dk brn, dk gy brn, mod  
sft-sl frm, sb biky-sb pily, rthy-sily tex,  
sl mot, v calc, abnt bent, rr inoc fos

MD: 7,259'  
TVD: 6,695.33'  
Inclination: 88.8°  
Azimuth: 272.78°  
VS: 1,010.87'

50% CHK: lt gy-med gy, mily, sft-sl  
occ frm, biky-sb biky, wxy-rthy tex  
MRLST: dk brn, dk gy brn, mod sft  
sb biky-sb pily, rthy-sily tex, sl mo  
tr bent

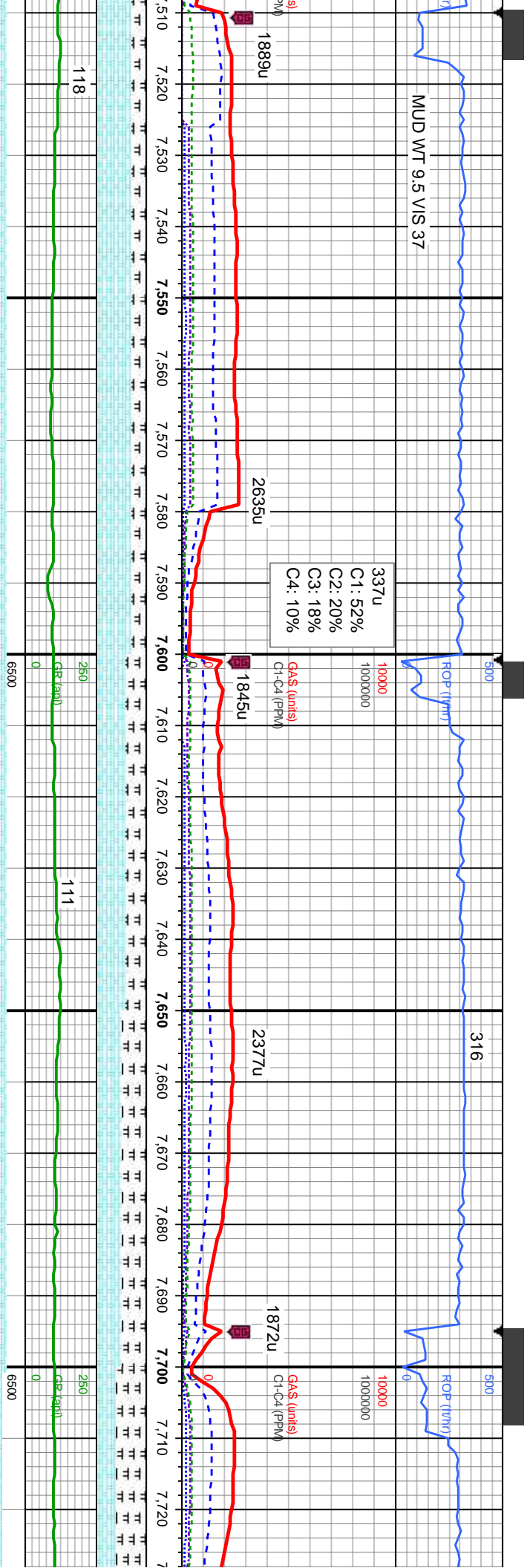
8000

8000









MD: 7,538'  
TVD: 6,698.06'  
Inclination: 88.64 °  
Azimuth: 270.7 °  
VS: 1,287.78'

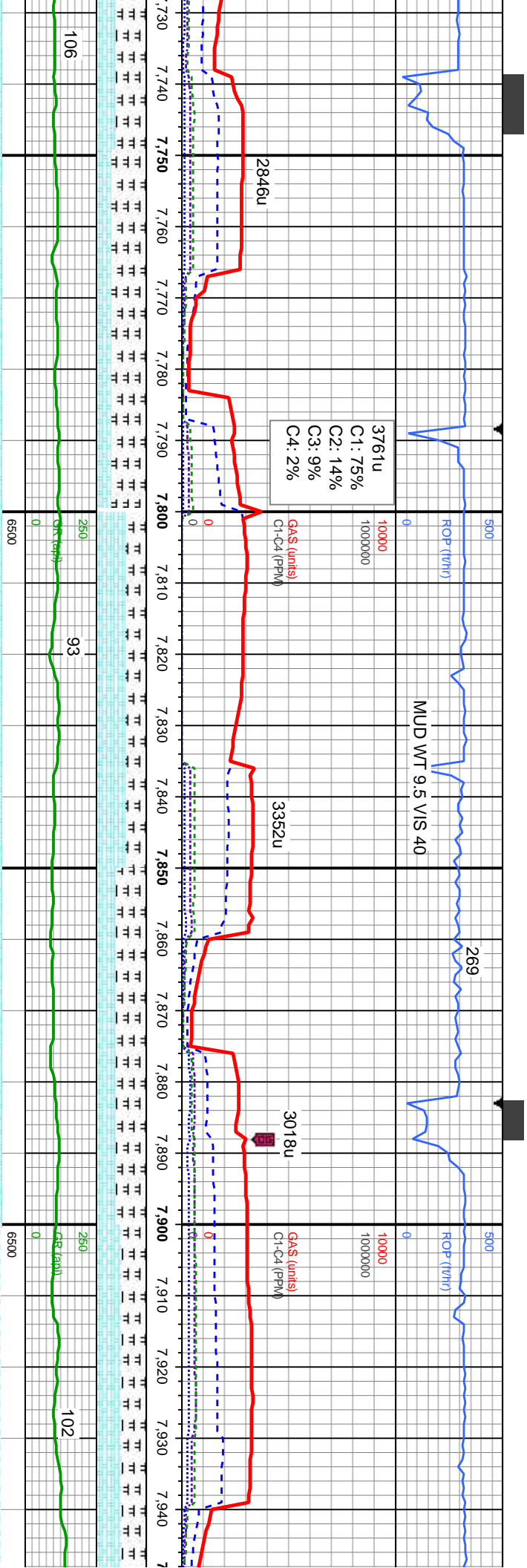
CHK: lt gy-med gy, mrly, sft-mod occ frm, blk-y-sb blk-y, wxy-rthy tex; MRLST: dk brn, dk gy brn, mod l frm, sb blk-y-sb ply, rthy-sily tex, sl v calc, tr bent, rr fos, occ pyr	70% CHK: lt gy-med gy, mrly, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex; 30% MRLST: dk brn, dk gy brn, mod sft-sl frm, sb blk-y-sb ply, rthy-sily tex, sl mot, v calc, tr bent, rr fos, occ pyr	60% CHK: lt gy-med gy, mrly, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex; 40% MRLST: dk brn, dk gy brn, mod sft-sl frm, sb blk-y-sb ply, rthy-sily tex, sl mot, v calc, rr bent	50% CHK: lt gy-med gy, mrly, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex; 50% MRLST: dk brn, dk gy brn, mod sft-sl frm, sb blk-y-sb ply, rthy-sily tex, sl mot, v calc, rr bent	60% MRLST: dk brn, dk gy brn, mod sft-sl frm, sb blk-y-sb ply, rthy-sily tex, occ f mrly, sft-mod sft, occ f wxy-rthy tex, rr fos, tr
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MD: 7,630'  
TVD: 6,698.76'  
Inclination: 90.49 °  
Azimuth: 270.8 °  
VS: 1,379.03'

MD: 7,722'  
TVD: 6,698.98'  
Inclination: 89  
Azimuth: 269  
VS: 1,470.43'







106	250	93	250	102
0	0	0	0	0
6500	6500	6500	6500	6500
7,730	7,740	7,750	7,760	7,770
7,780	7,790	7,800	7,810	7,820
7,830	7,840	7,850	7,860	7,870
7,880	7,890	7,900	7,910	7,920
7,930	7,940			
7,950				
7,960				
7,970				
7,980				
7,990				
8,000				

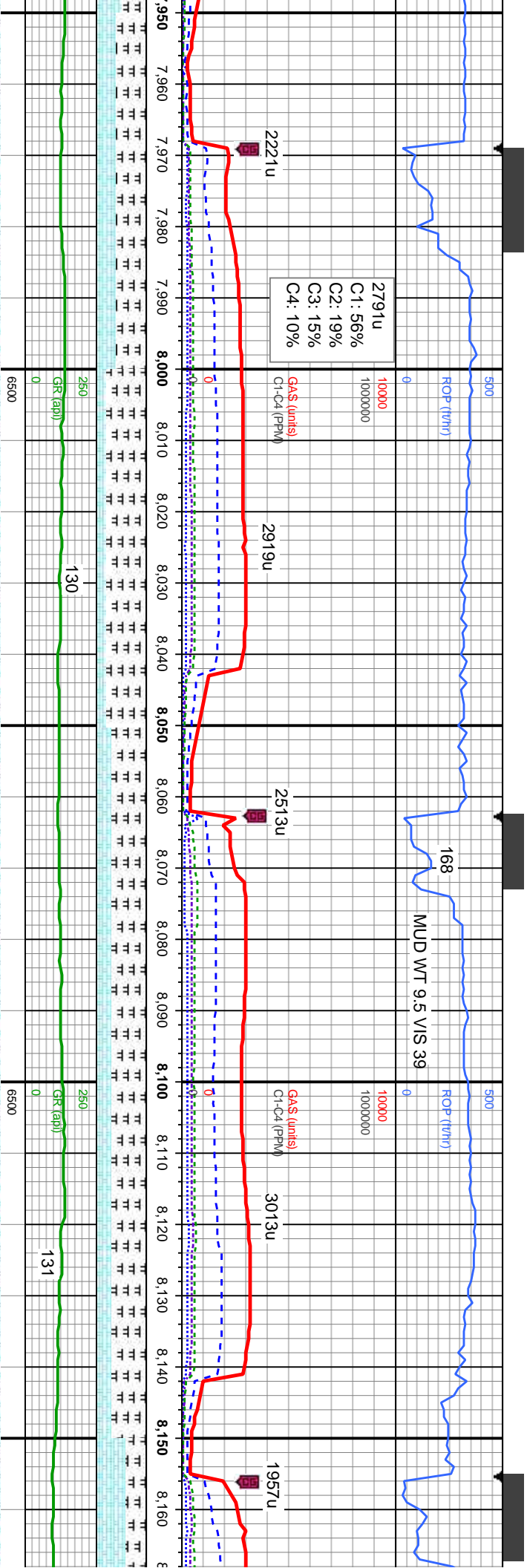
70% MRLST: dk brn, dk gy brn, mod sft-sl frm, sb blk-y-sb pily, rthy-sily tex, sl mot, v calc 30% CHK: lt gy-med gy, mrly, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex, rr fos, tr pyr	60% CHK: lt gy-med gy, mrly, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex, 40% MRLST: dk brn, dk gy brn, mod sft-sl frm, sb blk-y-sb pily, rthy-sily tex, sl mot, v calc, rr calc fos	60% MRLST: dk brn, dk gy brn, mod sft-sl frm, sb blk-y-sb pily, rthy-sily tex, sl mot, v calc 40% CHK: lt gy-med gy, mrly, occ mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex	50% MRLST: dk brn, dk gy brn, mod sft-sl frm, sb blk-y-sb pily, rthy-sily tex, sl mot, v calc 50% CHK: lt gy-med gy, mrly, occ mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex, tr bent, rr fos
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MD: 7,815' TVD: 6,700.53' Inclination: 88.86° Azimuth: 268.48° VS: 1,563.01'	MD: 7,908' TVD: 6,701.01' Inclination: 90.55° Azimuth: 268.24° VS: 1,655.66'
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23°	2°
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MD: 8,001'  
TVD: 6,701.14'  
Inclination: 89.29 °  
Azimuth: 266.9 °  
VS: 1,748.42'

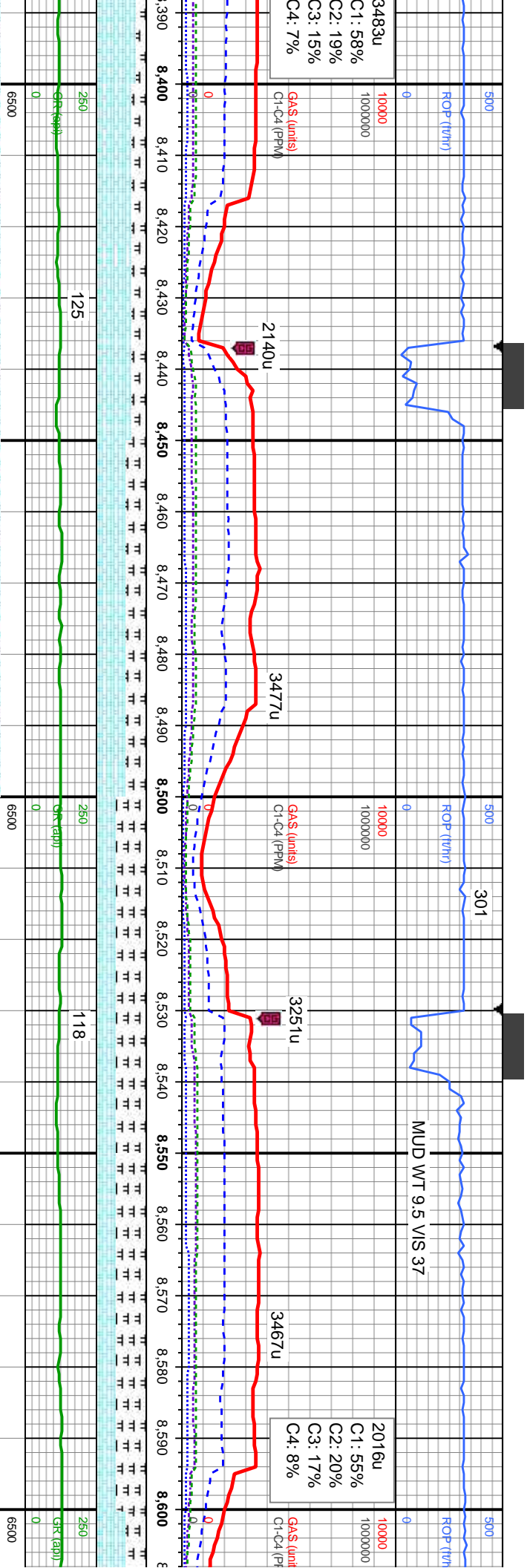
MD: 8,094'  
TVD: 6,700.94'  
Inclination: 90.96 °  
Azimuth: 269.41 °  
VS: 1,841.1'

60% MRLST: dk brn, dk gy brn, mod sft-sl frm, sb blk-ly-sb ply, rthy-slty tex, sl mot, v calc 40% CHK: lt gy-med gy, mot, sft-mod sft, occ frm, blk-ly-sb blk-ly, wxy-rthy tex, rr bent, rr tos	80% MRLST: dk brn, dk gy brn, mod sft-sl frm, sb blk-ly-sb ply, rthy-slty tex, sl mot, v calc 20% CHK: lt gy-med gy, mot, sft-mod sft, occ frm, blk-ly-sb blk-ly, wxy-rthy tex	70% MRLST: dk brn, dk gy brn, mod sft-sl frm, sb blk-ly-sb ply, rthy-slty tex, sl mot, v calc 30% CHK: lt gy-med gy, mot, sft-mod sft, occ frm, blk-ly-sb blk-ly, wxy-rthy tex	70% MRLST: dk brn, dk gy brn, mod sft-sl frm, sb blk-ly-sb ply, rthy-slty tex, sl mot, v calc 30% CHK: lt gy-med gy, mot, sft-mod sft, occ frm, blk-ly-sb blk-ly, wxy-rthy tex	60% CHK: lt gy sft-mod sft, occ tex: 40% MRLST sft-sl frm, sb blk-ly-sb blk-ly, wxy-rthy tex, rr bent, rr tos
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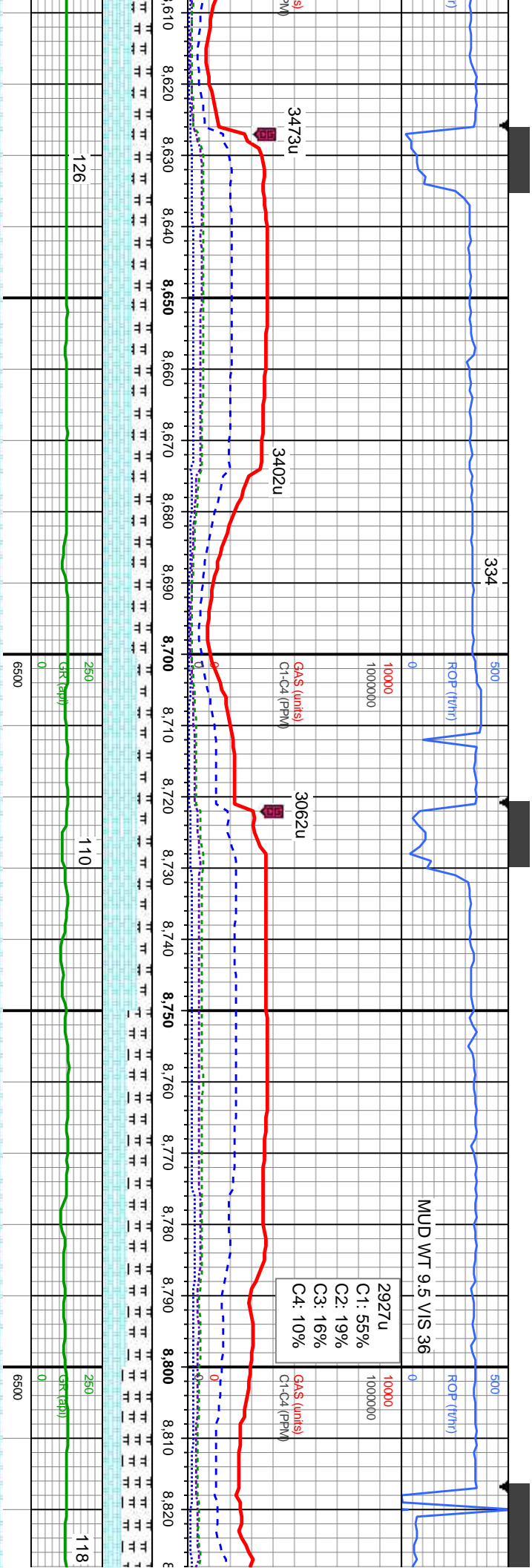


3483u	C1: 58%	C2: 19%	C3: 15%	C4: 7%
10000	1000000			
ROP (ft/hr)				
GAS (units)				
CI-C4 (PPM)				
2140u				
3477u				
3251u				
3467u				
2016u	C1: 55%	C2: 20%	C3: 17%	C4: 8%
10000	1000000			
ROP (ft/hr)				
GAS (units)				
CI-C4 (PPM)				

MD: 8,465'	TVD: 6,699.71'	Inclination: 89.75°	Azimuth: 267.66°	VS: 2,211.21'
60% CHK: lt gy-dk gy, v mrlly, sl mot, sft-mod sft, occ frm, blkly-sb blkly, wxy-rthy tex, 40% MRLST: dk brn, dk gy brn, mod sft-sl frm, sb blkly-sb ply, rthy-sily tex, v calc	60% MRLST: dk brn, dk gy brn, mod sft-sl frm, sb blkly-sb ply, rthy-sily tex, v calc; 40% CHK: lt gy-dk gy, v mrlly, sl mot, sft-mod sft, occ frm, blkly-sb blkly, wxy-rthy tex	60% MRLST: dk brn, dk gy brn, mod sft-sl frm, sb blkly-sb ply, rthy-sily tex, v calc; 40% CHK: lt gy-dk gy, v mrlly, sl mot, sft-mod sft, occ frm, blkly-sb blkly, wxy-rthy tex	60% MRLST: dk brn, dk gy brn, mod sft-sl frm, sb blkly-sb ply, rthy-sily tex, v calc; 40% CHK: lt gy-dk gy, v mrlly, sl mot, sft-mod sft, occ frm, blkly-sb blkly, wxy-rthy tex	60% MRLST: dk brn, dk gy brn, mod sft-sl frm, sb blkly-sb ply, rthy-sily tex, v calc; 40% CHK: lt gy-dk gy, v mrlly, sl mot, sft-mod sft, occ frm, blkly-sb blkly, wxy-rthy tex
70% CHK: lt gy-dk gy, v mrlly, sl mot, sft-mod sft, occ frm, blkly-sb blkly, wxy-rthy tex, 30% MRLST: dk brn, dk gy brn, mod sft-sl frm, sb blkly-sb ply, rthy-sily tex, v calc	60% CHK: lt gy-dk gy, v mrlly, sl mot, sft-mod sft, occ frm, blkly-sb blkly, wxy-rthy tex, 40% MRLST: dk brn, dk gy brn, mod sft-sl frm, sb blkly-sb ply, rthy-sily tex, v calc	60% MRLST: dk brn, dk gy brn, mod sft-sl frm, sb blkly-sb ply, rthy-sily tex, v calc; 40% CHK: lt gy-dk gy, v mrlly, sl mot, sft-mod sft, occ frm, blkly-sb blkly, wxy-rthy tex	60% MRLST: dk brn, dk gy brn, mod sft-sl frm, sb blkly-sb ply, rthy-sily tex, v calc; 40% CHK: lt gy-dk gy, v mrlly, sl mot, sft-mod sft, occ frm, blkly-sb blkly, wxy-rthy tex	60% MRLST: dk brn, dk gy brn, mod sft-sl frm, sb blkly-sb ply, rthy-sily tex, v calc; 40% CHK: lt gy-dk gy, v mrlly, sl mot, sft-mod sft, occ frm, blkly-sb blkly, wxy-rthy tex
8000	8000	8000	8000	8000







MD: 8,654'  
TVD: 6,701.44'  
Inclination: 89.63 °  
Azimuth: 267.5°  
VS: 2,399.77'

60% CHK: lt gy-dk gy, v mrlly, sl mot,  
sft-mod sft, occ frm, blkly-sb blkly,  
xy-rthy tex: 40% MRLST: dk brn, dk  
brn, mod sft-sl frm, sb blkly-sb  
gy, rthy-sltly tex, v calc

60% CHK: lt gy-dk gy, v mrlly, sl  
mot, sft-mod sft, occ frm, blkly-sb  
blkly, wxy-rthy tex: 40% MRLST: dk  
brn, dk gy brn, mod sft-sl frm, sb  
blkly-sb ply, rthy-sltly tex, v calc

TVD (ft)

MD: 8,749'  
TVD: 6,700.08'  
Inclination: 92.01 °  
Azimuth: 269.26°  
VS: 2,494.41'

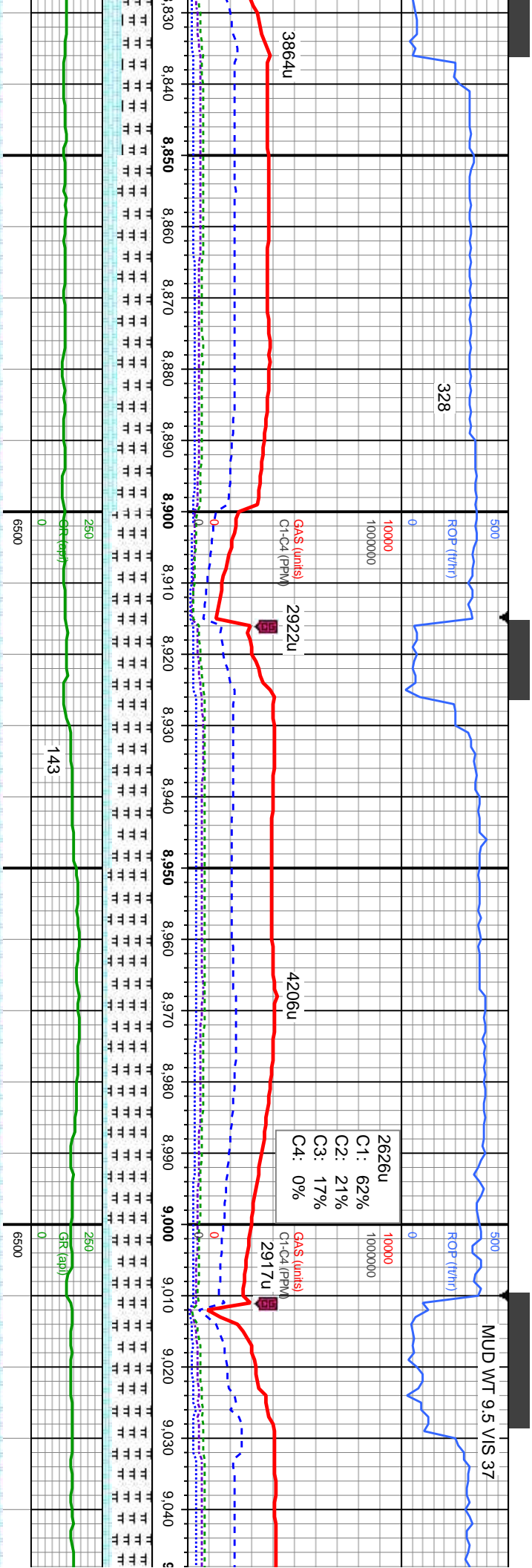
70% CHK: lt gy-dk gy, v mrlly, sl  
mot, sft-mod sft, occ frm, blkly-sb  
blkly, wxy-rthy tex: 30% MRLST: dk  
brn, dk gy brn, mod sft-sl frm, sb  
blkly-sb ply, rthy-sltly tex, v calc

50% CHK: lt gy brn-dk gy, sl mot,  
sft-mod sft, occ frm, blkly-sb blkly,  
wxy-rthy tex: 50% MRLST: dk brn, dk gy  
brn, mod sft-sl frm, sb blkly-sb ply,  
rthy-sltly tex, v calc

TVD (ft)

60% MRLST: dk brn, dk  
frm, sb blkly-sb ply, rthy-s  
CHK: lt gy brn-dk gy, sl m  
frm, blkly-sb blkly, wxy-rthy





MD: 8,844'  
TVD: 6,697.7'  
Inclination: 90.86 °  
Azimuth: 266.95 °  
VS: 2,589.06'

gy brn, mod sft-sl  
ilty tex, v calc: 40%  
ot, sft-mod sft, occ  
tex, scat bent

70% MRLST: dk brn, dk gy brn, mod sft-sl  
frm, sb blkys-sb ply, rthy-sily tex, v calc: 30%  
CHK: lt gy brn-dk gy, sl mot, sft-mod sft, occ  
frm, blkys-sb blkys, wxy-rthy tex, scat bent

MD: 8,939'  
TVD: 6,696.02'  
Inclination: 91.17 °  
Azimuth: 266.5 °  
VS: 2,683.89'

80% MRLST: dk brn, dk gy brn, mod sft-sl  
frm, sb blkys-sb ply, rthy-sily tex, v calc: 20%  
CHK: lt gy brn-dk gy, sl mot, sft-mod sft, occ  
frm, blkys-sb blkys, wxy-rthy tex, scat bent

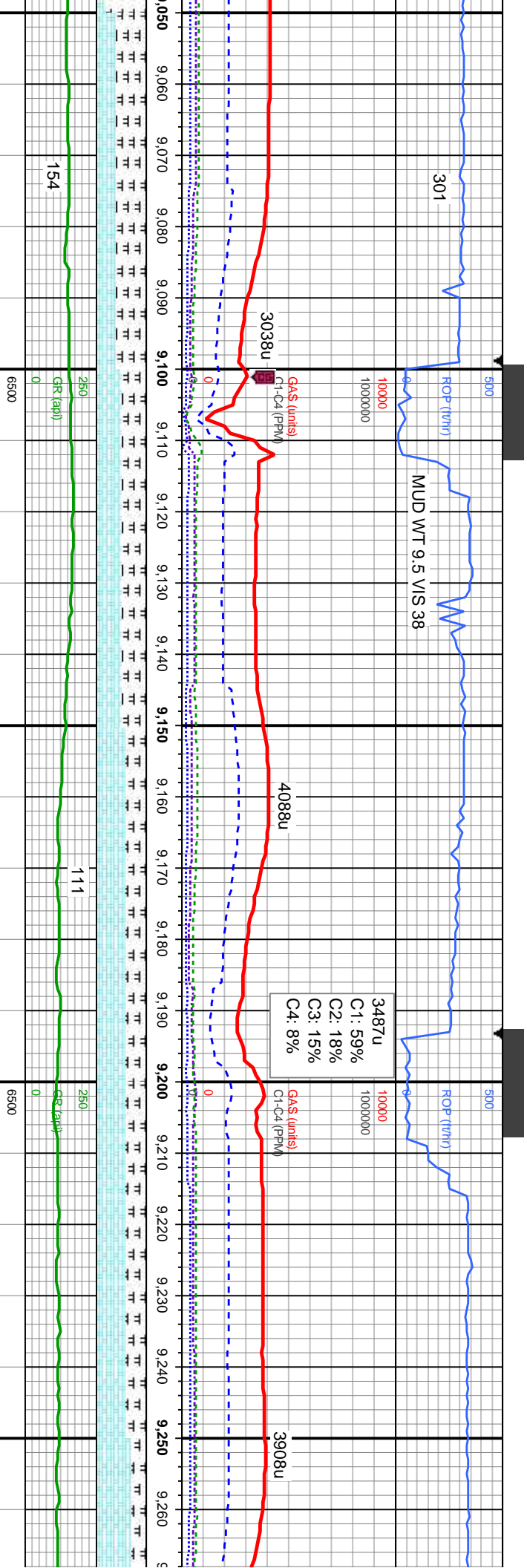
90% MRLST: dk brn, dk gy brn, mod sft-sl  
frm, sb blkys-sb ply, rthy-sily tex, v calc: 10%  
CHK: lt gy brn-dk gy, sl mot, sft-mod sft, occ  
frm, blkys-sb blkys, wxy-rthy tex, scat bent

MD: 9,033'  
TVD: 6,694.98'  
Inclination: 90.09 °  
Azimuth: 266.74 °  
VS: 2,777.74'

80% MRLST: dk gy-dk gy brn, mod sft-sl  
frm, sb blkys-sb ply, rthy-sily tex, v calc: 20%  
CHK: lt gy brn-dk gy, sl mot, sft-mod sft, occ  
frm, blkys-sb blkys, wxy-rthy tex, occ bent



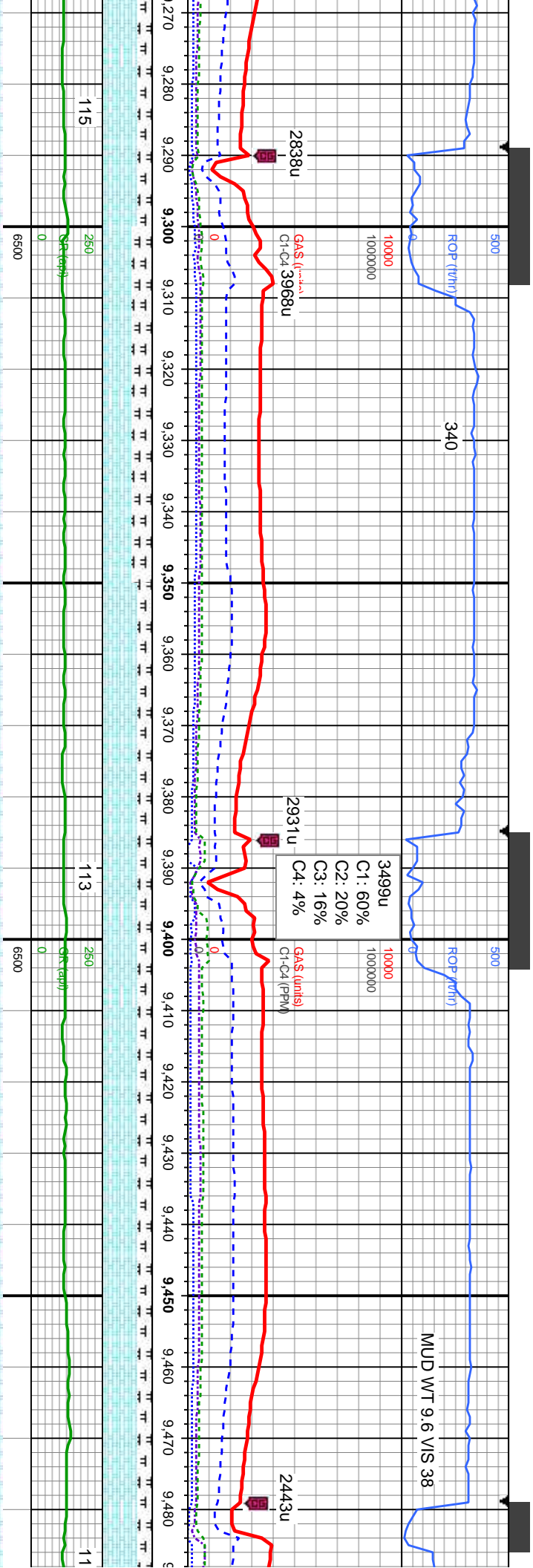




60% MRLST: dk gy-dk gy brn, mod sft-sl frm, sb biky-sb ply, rthy-slty tex, v calc; 40% CHK: lt gy brn-dk gy, sl mot, sft-mod sft, occ frm, biky-sb biky, wxy-rthy tex, occ bent	50% MRLST: dk gy-dk gy brn, mod sft-sl frm, sb biky-sb ply, rthy-slty tex, v calc; 50% CHK: lt gy brn-dk gy, sl mot, sft-mod sft, occ frm, biky-sb biky, wxy-rthy tex, occ bent	60% CHK: lt gy brn-dk gy, sl mot, sft-mod sft, occ frm, biky-sb biky, wxy-rthy tex; 40% MRLST: dk gy-dk gy brn, mod sft-sl frm, sb biky-sb ply, rthy-slty tex, v calc, occ bent	60% CHK: lt gy brn-dk gy, sl mot, sft-mod sft, occ frm, biky-sb biky, wxy-rthy tex; 40% MRLST: dk gy-dk gy brn, mod sft-sl frm, sb biky-sb ply, rthy-slty tex, v calc, scat bent	70% CHK: lt gy sft, occ frm, biky MRLST: dk gy-c biky-sb ply, rth
TVD (ft)	TVD (ft)	TVD (ft)	TVD (ft)	
MD: 9,129' TVD: 6,696.63' Inclination: 89.14 ° Azimuth: 266.14 ° VS: 2,873.61'				
MD: 9,224' TVD: 6,696.16' Inclination: 90.22 ° Azimuth: 268.64 ° VS: 2,968.37'				

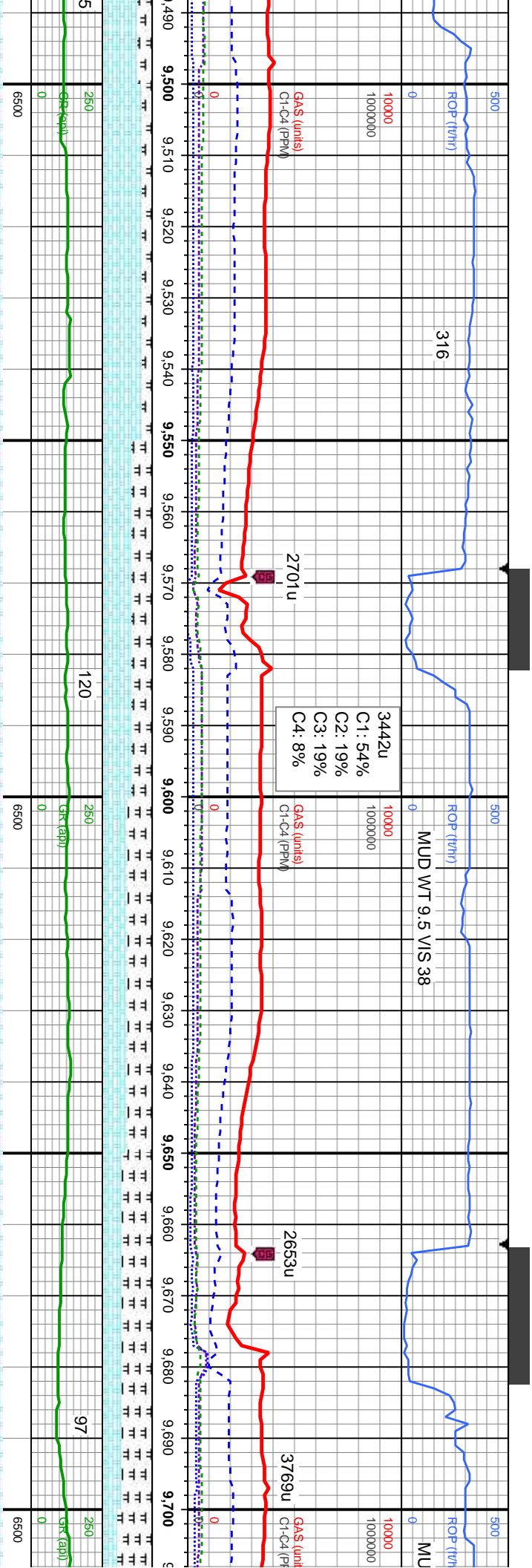






115	260	0	6500	MD: 9,319' TVD: 6,696.13' Inclination: 89.81 ° Azimuth: 272.23 ° VS: 3,062.66'	60% CHK: lt gy brn-dk gy, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex, 30% MRLST: dk gy-dk gy brn, mod sft-sl frm, sb blk-y-sb pily, rthy-sily tex, v calc, abnt bent
113	260	0	6500	MD: 9,414' TVD: 6,697.47' Inclination: 88.58 ° Azimuth: 272.41 ° VS: 3,156.51'	70% CHK: lt gy brn-dk gy, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex, 30% MRLST: dk gy-dk gy brn, mod sft-sl frm, sb blk-y-sb pily, rthy-sily tex, v calc, abnt bent, tr cal
11	260	0	6500		70% CHK: lt gy brn-dk gy, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy MRLST: dk gy-dk gy brn, mod sft-sl frm, sb blk-y-sb pily, rthy-sily tex, v calc, abnt bent, occ cal





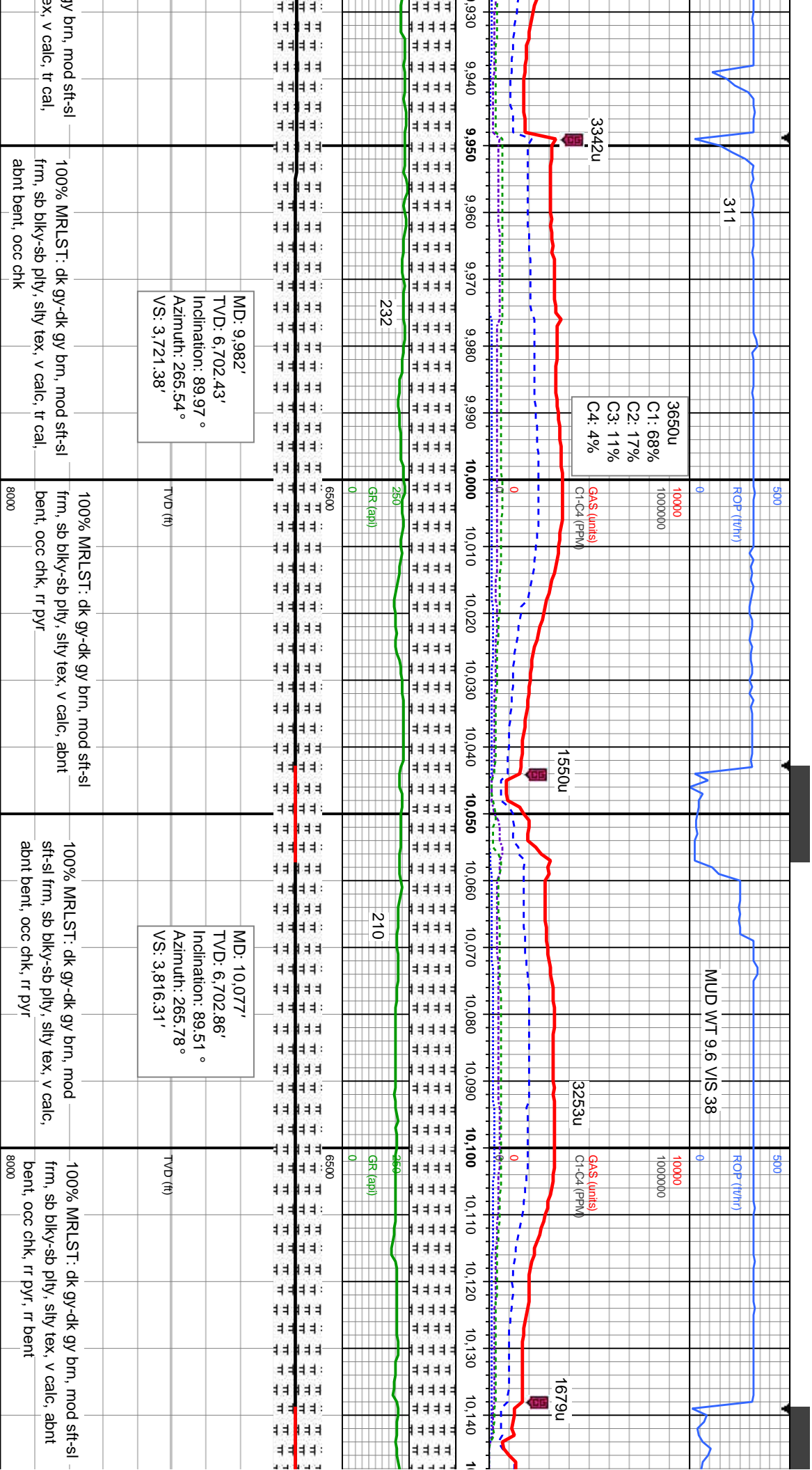
MD: 9,509' TVD: 6,699.33' Inclination: 89.17° Azimuth: 271.04° VS: 3,250.51'		80% CHK: lt gy brn-dk gy, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex; 20% MRLST: dk gy-dk gy brn, mod sft-sl frm, sb blk-y-sb pty, silty tex, v calc, abnt bent, tr cal	8000
MD: 9,603' TVD: 6,700.57' Inclination: 89.32° Azimuth: 270.74° VS: 3,343.72'		60% CHK: lt gy brn-dk gy, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex; 40% MRLST: dk gy-dk gy brn, mod sft-sl frm, sb blk-y-sb pty, silty tex, v calc, abnt bent, tr cal	8000
MD: 9,698' TVD: 6,701.87' Inclination: 89.11° Azimuth: 269.22° VS: 3,438.09'		70% CHK: lt gy brn-dk gy, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex; 40% MRLST: dk gy-dk gy brn, mod sft-sl frm, sb blk-y-sb pty, silty tex, v calc, abnt bent, tr cal	8000

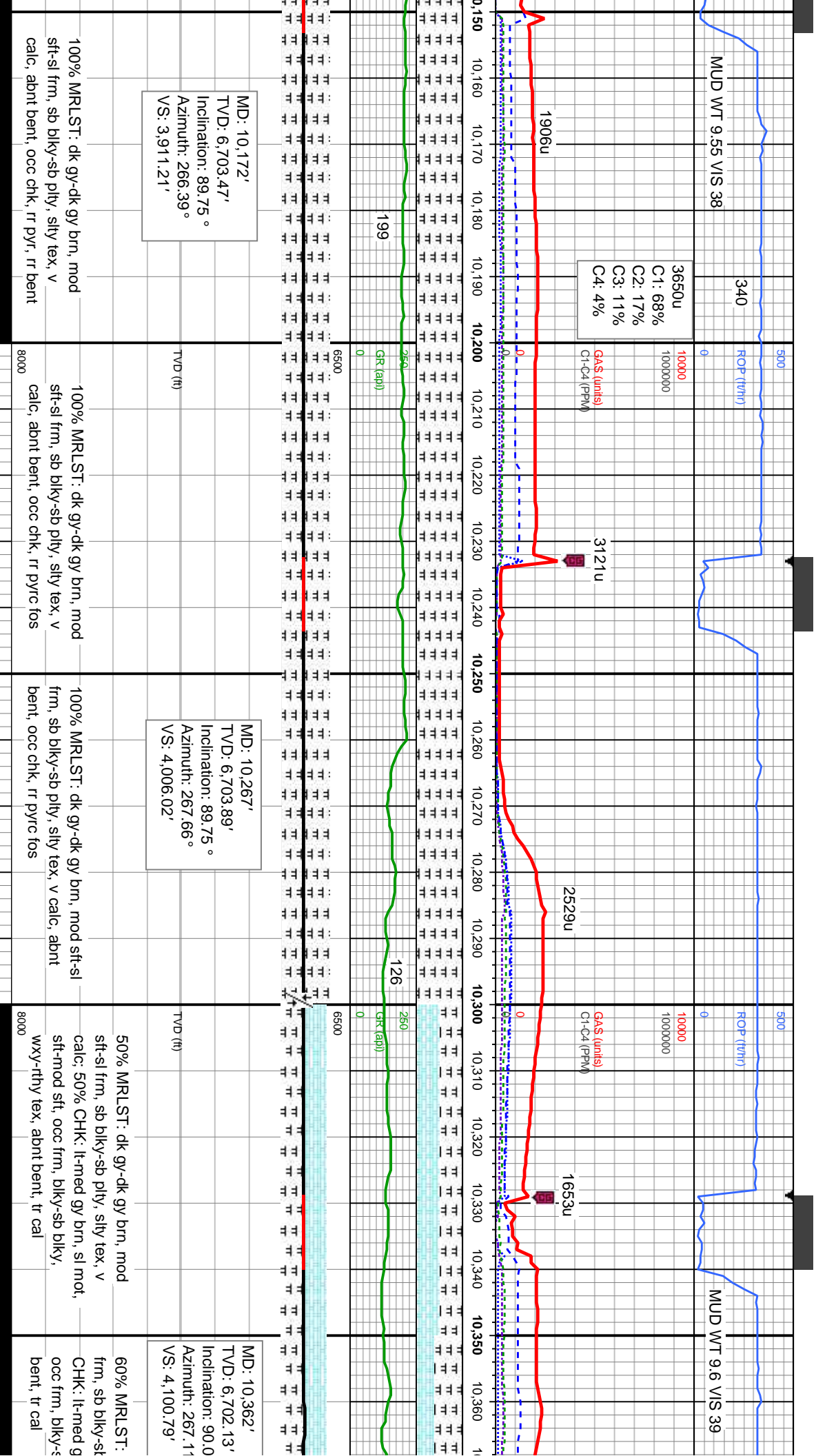




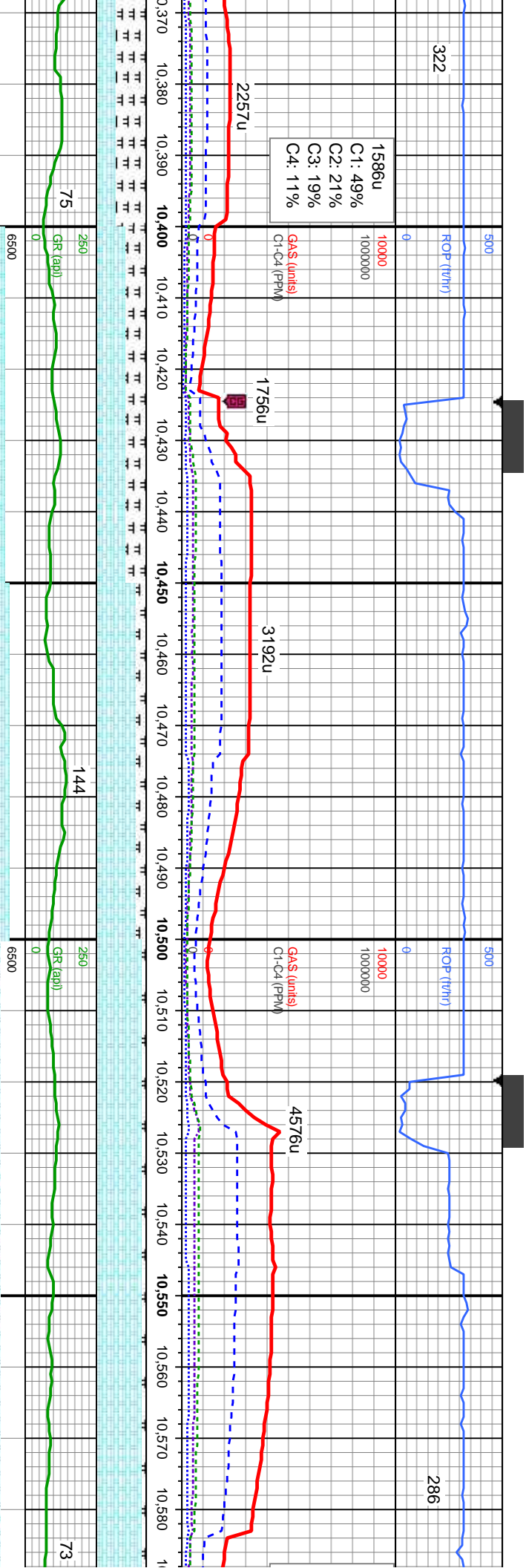






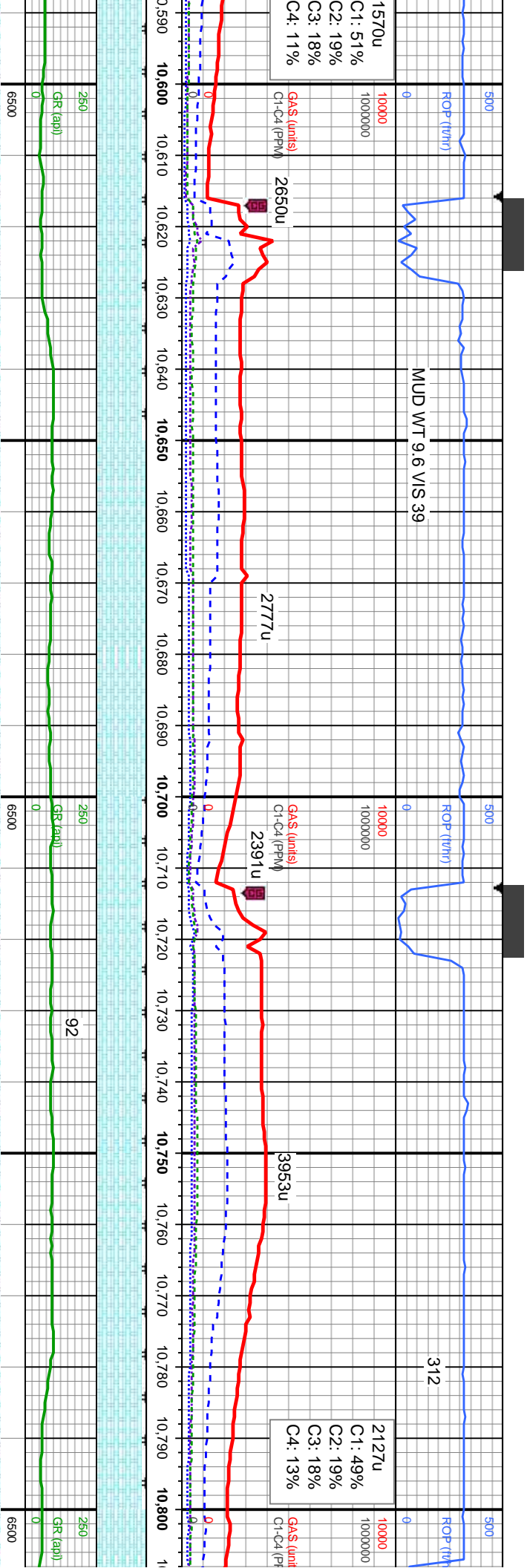






dk gy-dk gy brn, mod sft-sl p pty, sily tex, v calc; 40% y brn, sl mot, sft-mod sft, sb biky, wxy-rthy tex, abnt	60% CHK: lt gy brn-dk gy, sl mot, sft-mod sft, occ frm, biky-sb biky, wxy-rthy tex; 40% MRLST: dk gy-dk gy brn, mod sft-sl frm, sb biky-sb pty, sily tex, v calc, tr bent	80% CHK: lt gy brn-dk gy, sl mot, sft-mod sft, occ frm, biky-sb biky, wxy-rthy tex; 20% MRLST: dk gy-dk gy brn, mod sft-sl frm, sb biky-sb pty, sily tex, v calc, tr bent, rr pyr	90% CHK: lt gy brn-dk gy, sl mot, sft-mod sft, occ frm, biky-sb biky, wxy-rthy tex; 10% MRLST: dk gy-dk gy brn, mod sft-sl frm, sb biky-sb pty, sily tex, v calc, tr bent, rr fos
9 °	TVD (ft)	TVD (ft)	TVD (ft)
	MD: 10,457' TVD: 6,702.62' Inclination: 89.32 ° Azimuth: 266.62 ° VS: 4,195.62'	MD: 10,552' TVD: 6,702.93' Inclination: 90.31 ° Azimuth: 267.98 ° VS: 4,290.41'	

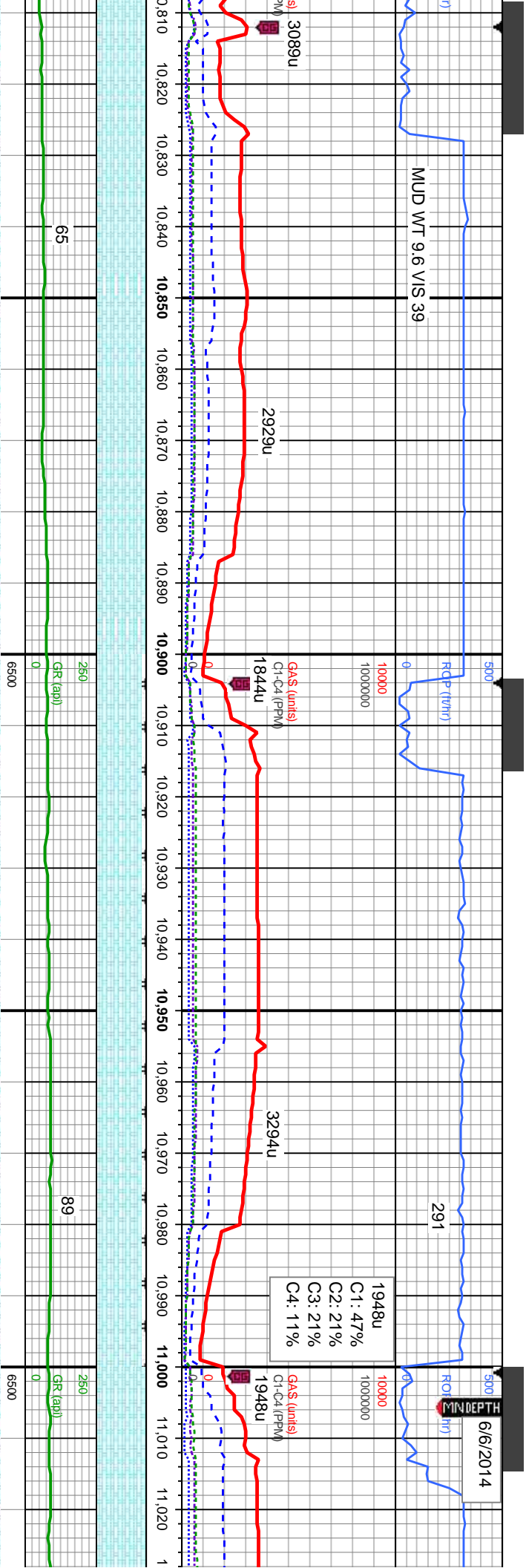




MD: 10,647' TVD: 6,702.1' Inclination: 90.68 ° Azimuth: 267.96 ° VS: 4,385.11'		90% CHK: It gy brn-dk gy, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex: 10% MRLST: dk gy-dk gy brn, mod sft-sl frm, sb blk-y-sb pty, sily tex, v calc, tr bent, rr fos	90% CHK: It gy brn-dk gy, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex: 10% MRLST: dk gy-dk gy brn, mod sft-sl frm, sb blk-y-sb pty, sily tex, v calc, rr fos
MD: 10,742' TVD: 6,700.01' Inclination: 91.85 ° Azimuth: 267.82 ° VS: 4,479.8'		90% CHK: It gy brn-dk gy, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex: 10% MRLST: dk gy-dk gy brn, mod sft-sl frm, sb blk-y-sb pty, sily tex, v calc, rr fos	90% CHK: It gy brn-dk gy, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex: 10% MRLST: dk gy-dk gy brn, mod sft-sl frm, sb blk-y-sb pty, sily tex, v calc, rr fos
MD: 10,742' TVD: 6,700.01' Inclination: 91.85 ° Azimuth: 267.82 ° VS: 4,479.8'		90% CHK: It gy brn-dk gy, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex: 10% MRLST: dk gy-dk gy brn, mod sft-sl frm, sb blk-y-sb pty, sily tex, v calc, rr fos	90% CHK: It gy brn-dk gy, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex: 10% MRLST: dk gy-dk gy brn, mod sft-sl frm, sb blk-y-sb pty, sily tex, v calc, rr fos







MD: 10,836'  
TVD: 6,697.93'  
Inclination: 90.68 °  
Azimuth: 267.42 °  
VS: 4,573.53'

CHK: lt gy brn-dk gy, sl mot, sft-mod  
occ frm, blk-y-sb blk-y, wxy-rthy tex, calc,  
it, tr calc fos, tr mlst

100% CHK: lt gy brn-dk gy, sl mot,  
sft-mod sft, occ frm, blk-y-sb blk-y,  
wxy-rthy tex, calc, tr mlst

TVD (ft)

MD: 10,932'  
TVD: 6,697.29'  
Inclination: 90.09 °  
Azimuth: 266.98 °  
VS: 4,669.33'

90% CHK: lt gy brn-dk gy, sl mot, sft-mod  
sft, occ frm, blk-y-sb blk-y, wxy-rthy tex; 10%  
MRLST: dk gy-dk gy brn, mod sft-sl frm,  
sb blk-y-sb plty, slty tex, v calc

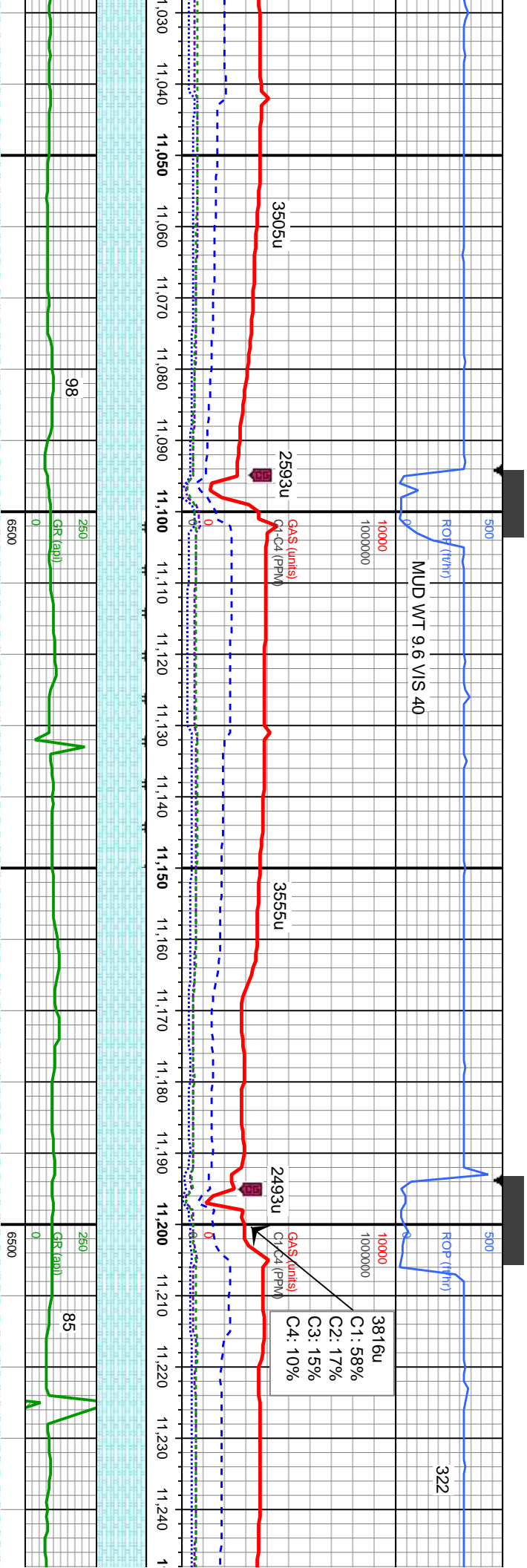
90% CHK: lt gy brn-dk gy, sl mot, sft-mod  
sft, occ frm, blk-y-sb blk-y, wxy-rthy tex; 10%  
MRLST: dk gy-dk gy brn, mod sft-sl frm,  
sb blk-y-sb plty, slty tex, v calc

TVD (ft)

MD: 11,026'  
TVD: 6,697  
Inclination:  
Azimuth: 21  
VS: 4,763.33'

100% CHK: lt gy br  
sft-mod sft, occ frm  
wxy-rthy tex, calc, t





MD: 11,121'  
TVD: 6,696.07'  
Inclination: 91.2°  
Azimuth: 267.93°  
VS: 4,857.84'

90% CHK: lt gy brn-dk gy, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex: 10%  
MRST: dk gy-dk gy brn, mod sft-sl frm, sb blk-y-sb pty, slty tex, v calc, r fos

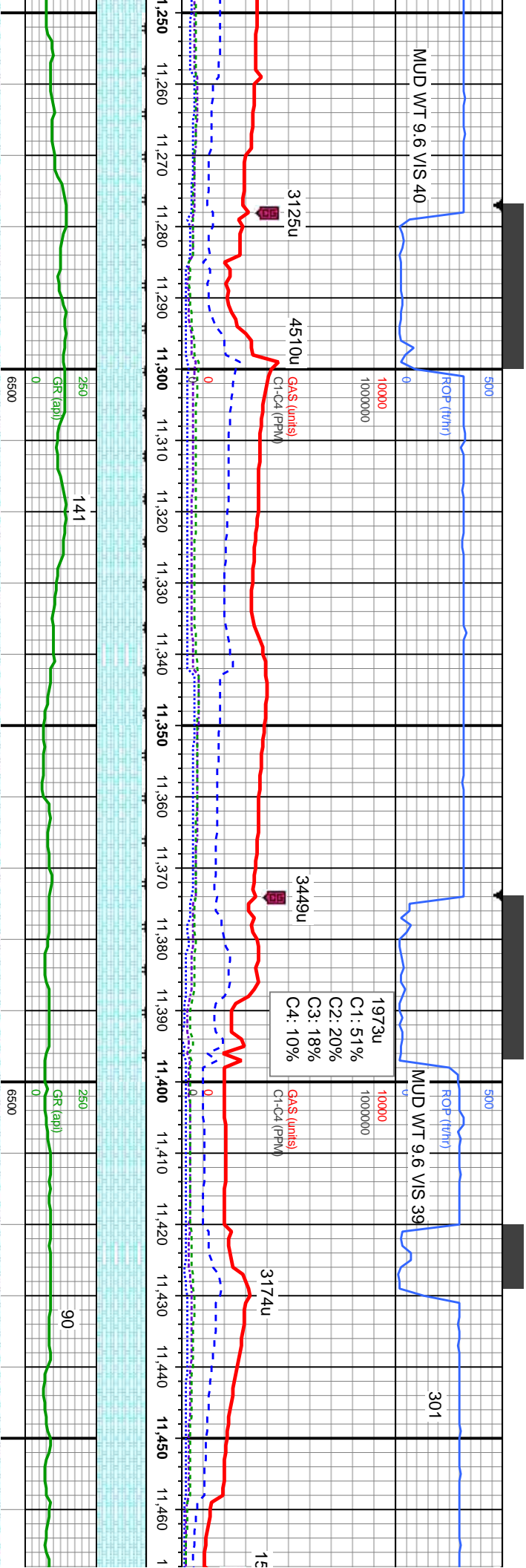
100% CHK: lt gy brn-dk gy, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex, calc, abnt mlst

MD: 11,216'  
TVD: 6,694.05'  
Inclination: 91.24°  
Azimuth: 268.3°  
VS: 4,952.51'

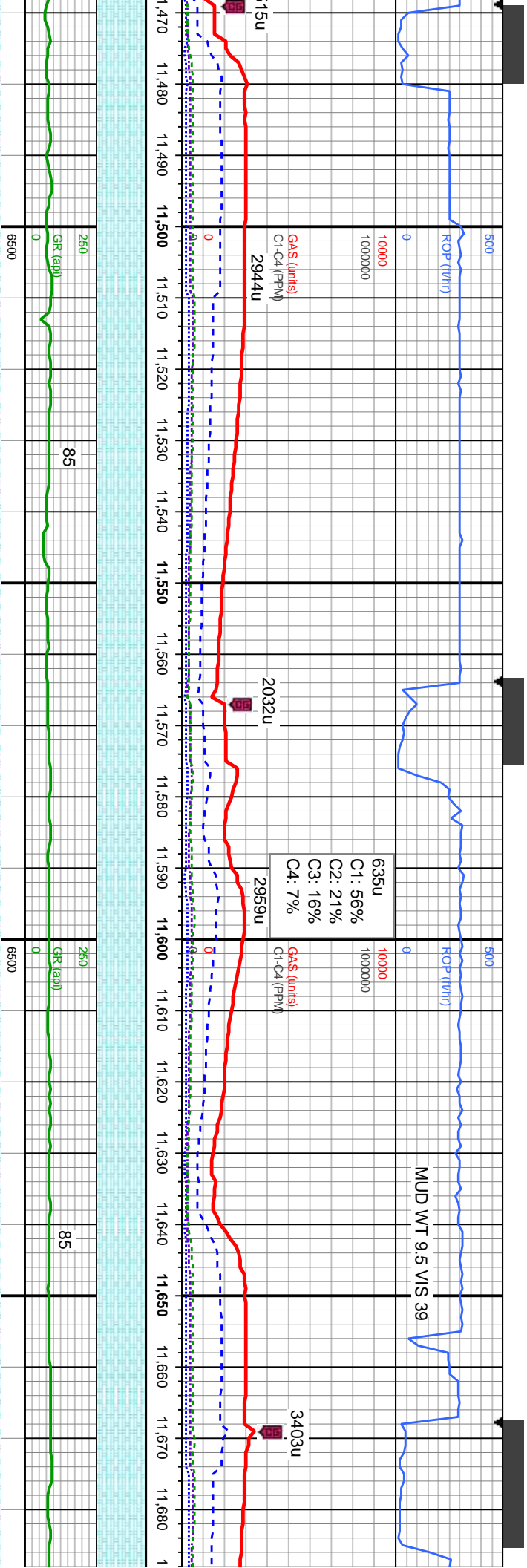
100% CHK: lt gy brn-dk gy, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex, calc, scat mlst, r bent







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MD: 11,500'  
TVD: 6,690.39'  
Inclination: 89.35 °  
Azimuth: 267 °  
VS: 5,235.68'

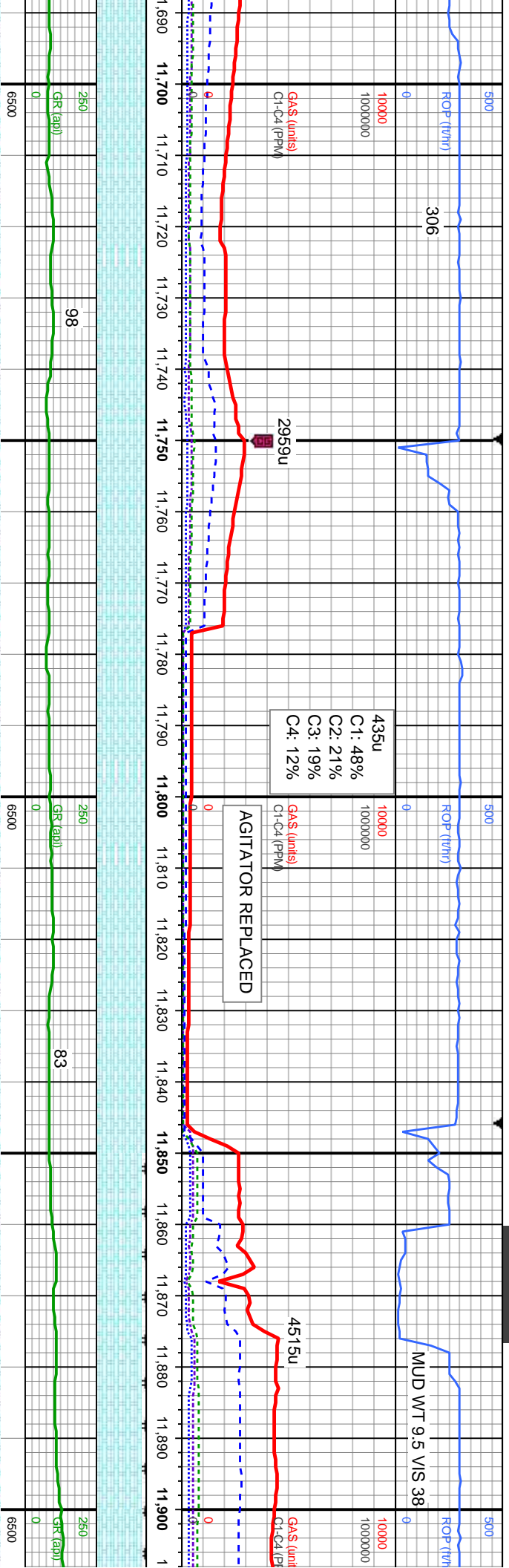
Depth (ft)	Description
11,470 - 11,500	100% CHK: lt-med gy brn, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex, tr bent, tr cal, occ mlst
11,500 - 11,595	100% CHK: lt-med gy brn, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex, tr cal, occ mlst
11,595 - 11,650	100% CHK: lt-med gy brn, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex, occ cal, occ mlst
11,650 - 11,680	100% CHK: lt-med gy brn, sl mot, sft, occ frm, blk-y-sb blk-y, wxy-rthy cal, scat mlst, tr bent

MD: 11,595'  
TVD: 6,691'  
Inclination: 89.91 °  
Azimuth: 267.62 °  
VS: 5,330.47'

MD: 11,6  
TVD: 6,6  
Inclination:  
Azimuth:  
VS: 5,42

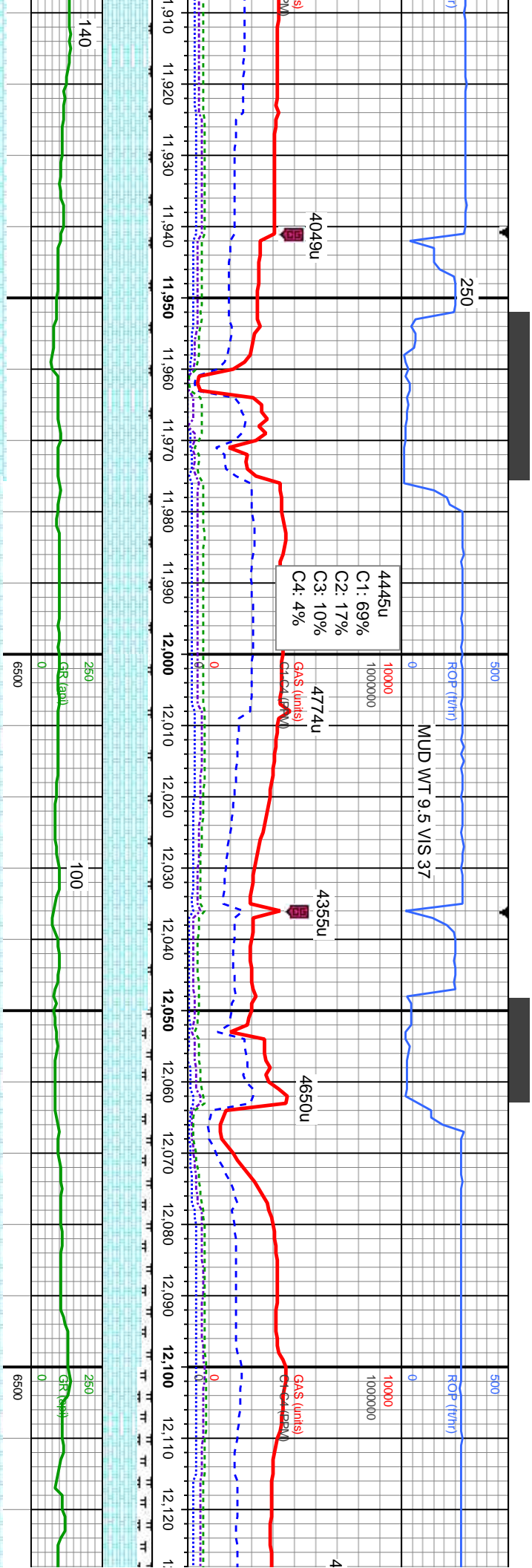






90'	92.2'	MD: 11,785'	TV D: 6,693.15'	Inclination: 90.22 °	Azimuth: 268.41 °	VS: 5,519.83'	90'
268.17 °	TV D (ft)						268.17 °
5.17'							5.17'
sft, mod	100% CHK: lt-med gy brn, sl mot, sft-mod	100% CHK: lt-med gy brn, sl mot, sft-mod	100% CHK: lt-med gy brn, sl mot, sft-mod	90% CHK: lt-med gy brn, sl mot, sft-mod	95% (		
tex, occ	sft, occ frm, blk-y-sb blk-y, wxy-rthy tex, occ	sft, occ frm, blk-y-sb blk-y, wxy-rthy tex, occ	sft, occ frm, blk-y-sb blk-y, wxy-rthy tex, occ	sft, occ frm, blk-y-sb blk-y, mod sft-sl frm, sb	sft, oc		
	cal, scat mlst, tr bent	cal, scat mlst	wxy-rthy tex, tr bent	blk-y-sb plty, silty tex, v calc, tr cal, tr bent	MR LST: dk gy-gy brn, mod sft-sl frm, sb	MR LST	
	8000	8000	8000	8000	8000	8000	





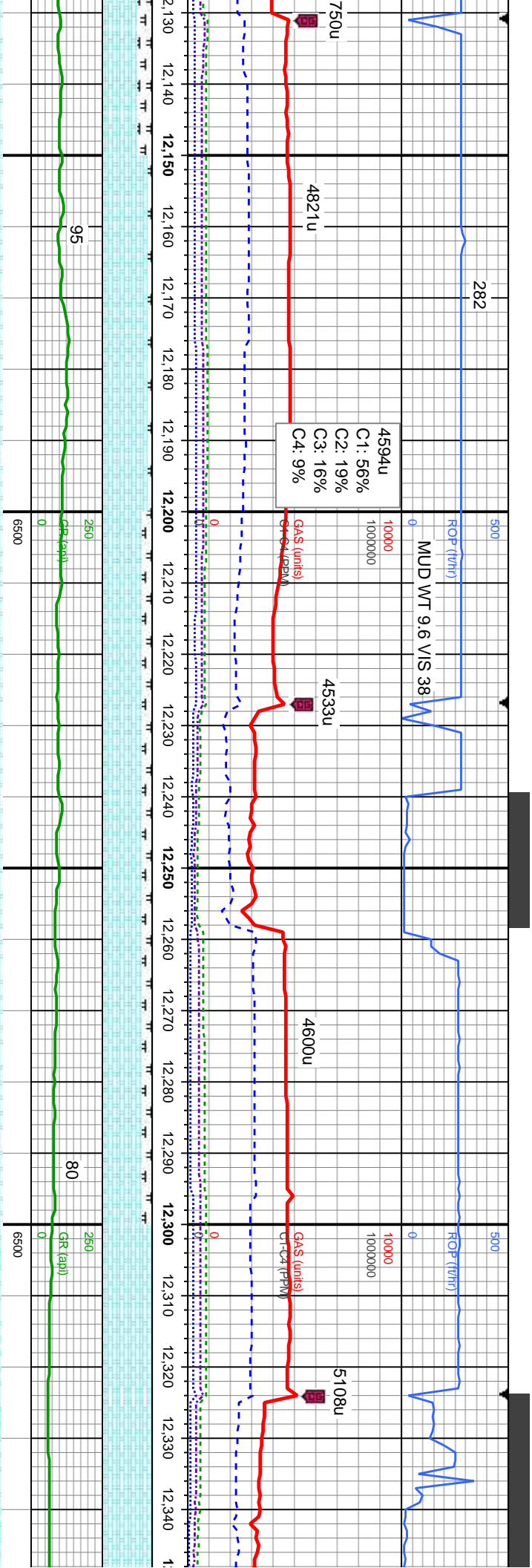
MD: 11,975'  
TVD: 6,693.12'  
Inclination: 89.2 °  
Azimuth: 268.01 °  
VS: 5,708.99'

MD: 12,070'  
TVD: 6,695.03'  
Inclination: 88.49 °  
Azimuth: 267.56 °  
VS: 5,803.7'

Depth (ft)	Description
11,910 - 11,975'	CHK: lt-med gy brn, sl mot, sft-mod c frm, blk-y-sb blk-y, wxy-rthy tex; 5% sft, occ frm, blk-y-sb blk-y, wxy-rthy tex; 5% MRLST: dk gy-gy brn, mod sft-sl frm, sb blk-y-sb pty, silty tex, v cal, tr cal, tr bent
11,975' - 12,070'	95% CHK: lt-med gy brn, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex; 5% MRLST: dk gy-gy brn, mod sft-sl frm, sb blk-y-sb pty, silty tex, occ cal, occ bent
12,070' - 12,100'	90% CHK: lt-med gy brn, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex; 10% MRLST: dk gy-gy brn, mod sft-sl frm, sb blk-y-sb pty, silty tex, occ cal, occ bent
12,100' - 12,120'	80% CHK: lt-med gy brn, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex; 20% MRLST: dk gy-gy brn, mod sft-sl frm, sb blk-y-sb pty, silty tex, tr cal, occ bent
12,120' - 12,140'	70% CHK: lt-med gy brn, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex; 30% MRLST: dk gy-gy brn, mod sft-sl frm, sb blk-y-sb pty, silty tex, scal

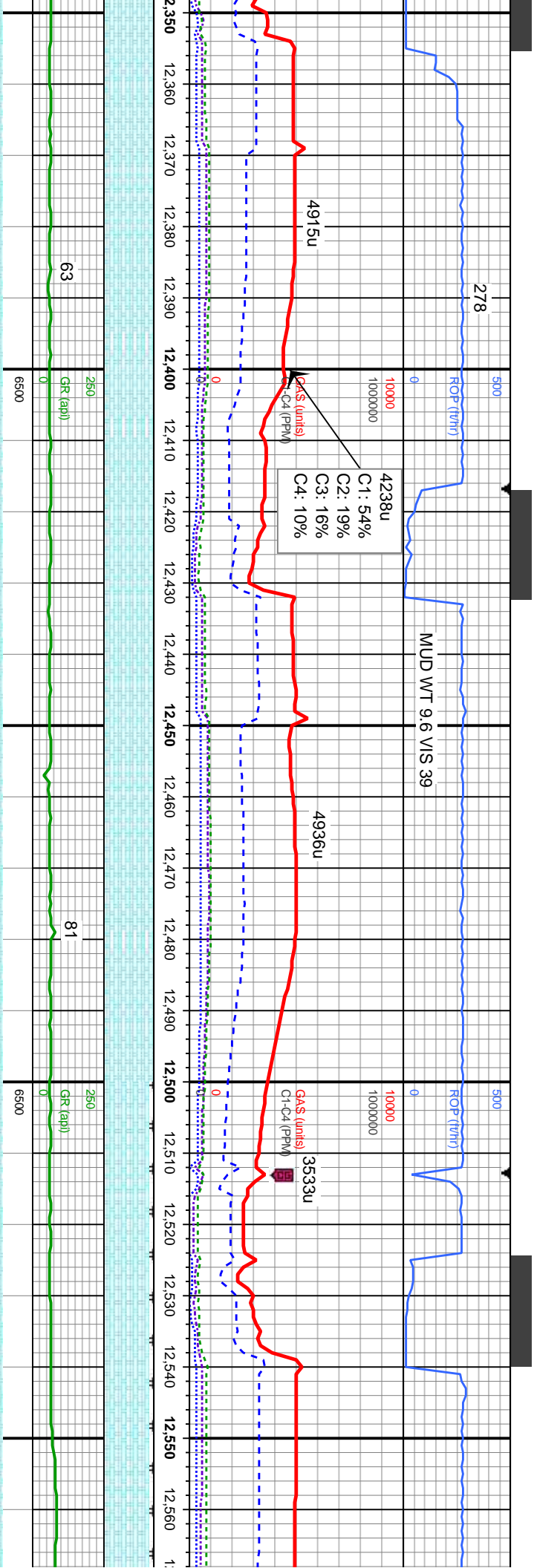






MD: 12,165' TVD: 6,695.67' Inclination: 90.74° Azimuth: 267.92° VS: 5,898.43'		MD: 12,260' TVD: 6,694.72' Inclination: 90.4° Azimuth: 268.21° VS: 5,993.12'		MD: 12,260' TVD: 6,694.72' Inclination: 90.4° Azimuth: 268.21° VS: 5,993.12'	
90% CHK: lt-med gy brn, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex; 10% MRLST: dk gy-gy brn, mod sft-sl frm, sb blk-y-sb ply, silty tex, scat cal, occ bent		80% CHK: lt-med gy brn, occ mrlly, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex; 20% MRLST: dk gy-gy brn, mod sft-sl frm, sb blk-y-sb ply, silty tex, scat cal, occ bent		80% CHK: lt-med gy brn, occ mrlly, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex; 20% MRLST: dk gy-gy brn, mod sft-sl frm, sb blk-y-sb ply, silty tex, scat cal, occ bent, rr pyr	
sl mot, sft-mod wxy-rthy tex; 30% mod sft-sl frm, sb cal, occ bent		100% CHK: lt-med gy brn, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex, tr cal, scat mrlst, tr bent			





MD: 12,355'  
TVD: 6,694.91'  
Inclination: 89.38°  
Azimuth: 268.19°  
VS: 6,087.8'

100% CHK: lt-med gy brn, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex, tr cal, tr mlst, occ bent

MD: 12,450'  
TVD: 6,695.8'  
Inclination: 89.54°  
Azimuth: 269.5°  
VS: 6,182.37'

100% CHK: lt-med gy brn, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex, tr cal, tr mlst

100% CHK: lt-med gy brn, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex

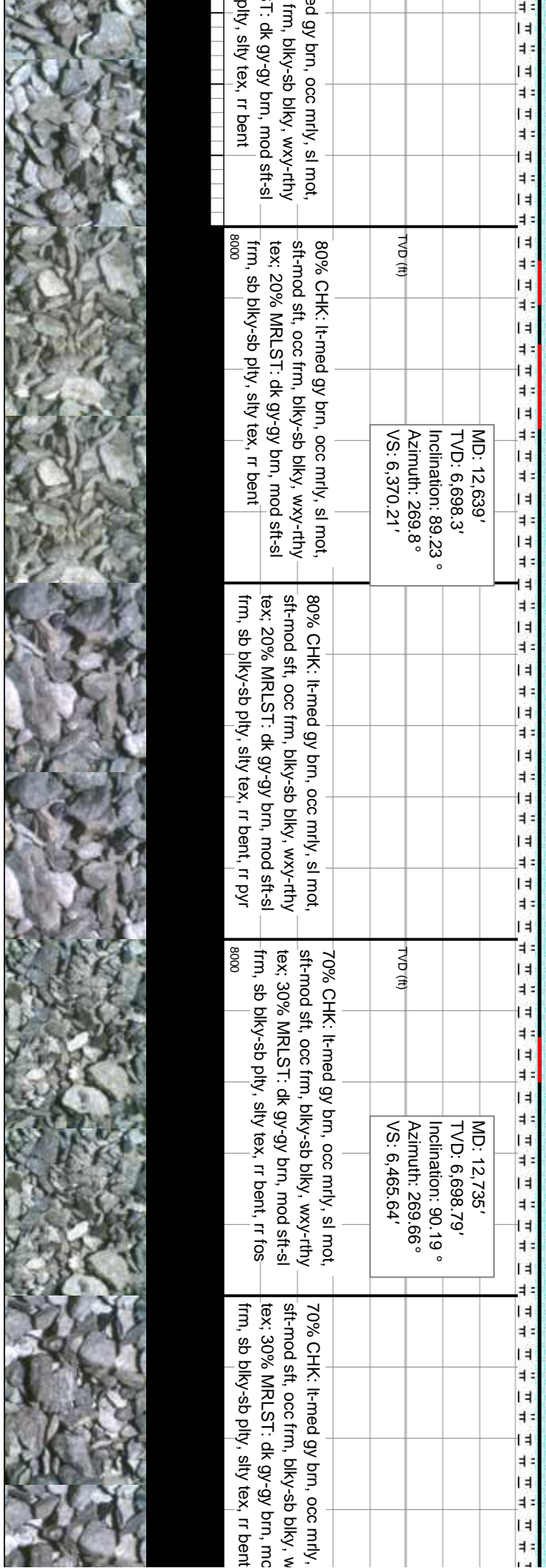
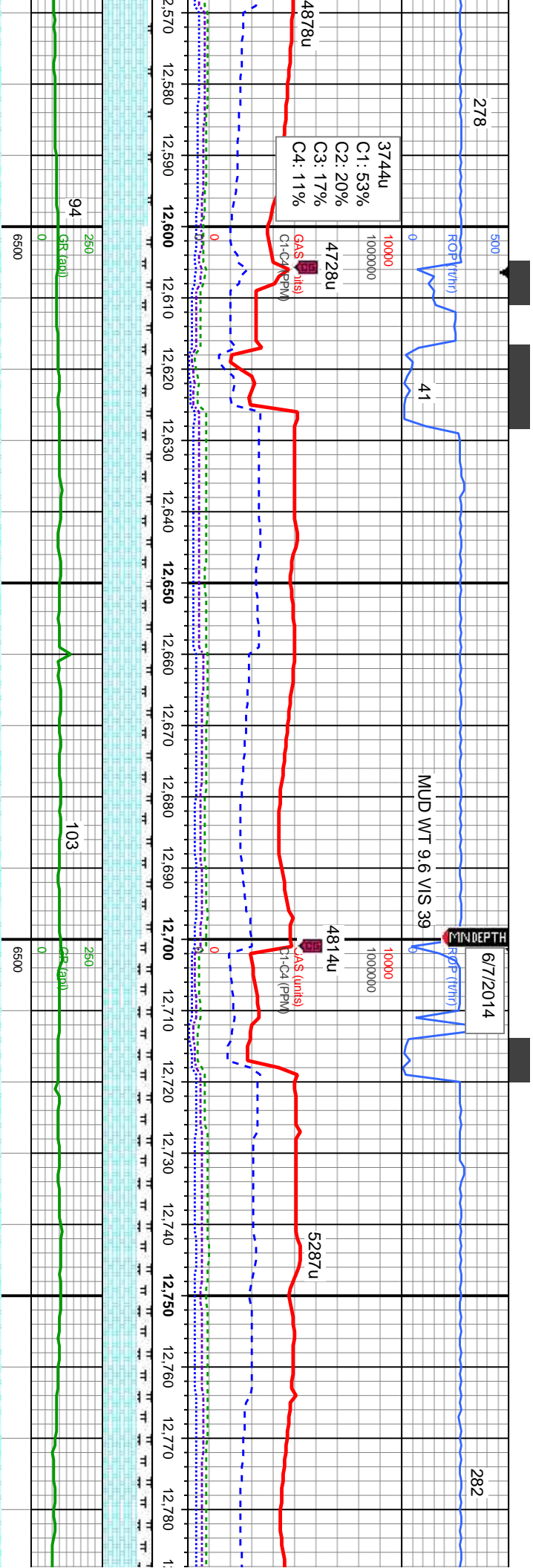
MD: 12,545'  
TVD: 6,696.93'  
Inclination: 89.1°  
Azimuth: 269.89°  
VS: 6,276.8'

90% CHK: lt-med gy brn, occ mrl'y, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex; 10% MRLST: dk gy-gy brn, mod sft-sl frm, sb blk-y-sb plty, silty tex, occ bent

90% CHK: lt-med gy brn, occ mrl'y, sl mot, sft-mod sft, occ frm, blk-y-sb blk-y, wxy-rthy tex; 10% MRLST: dk gy-gy brn, mod sft-sl frm, sb blk-y-sb plty, silty tex, occ bent

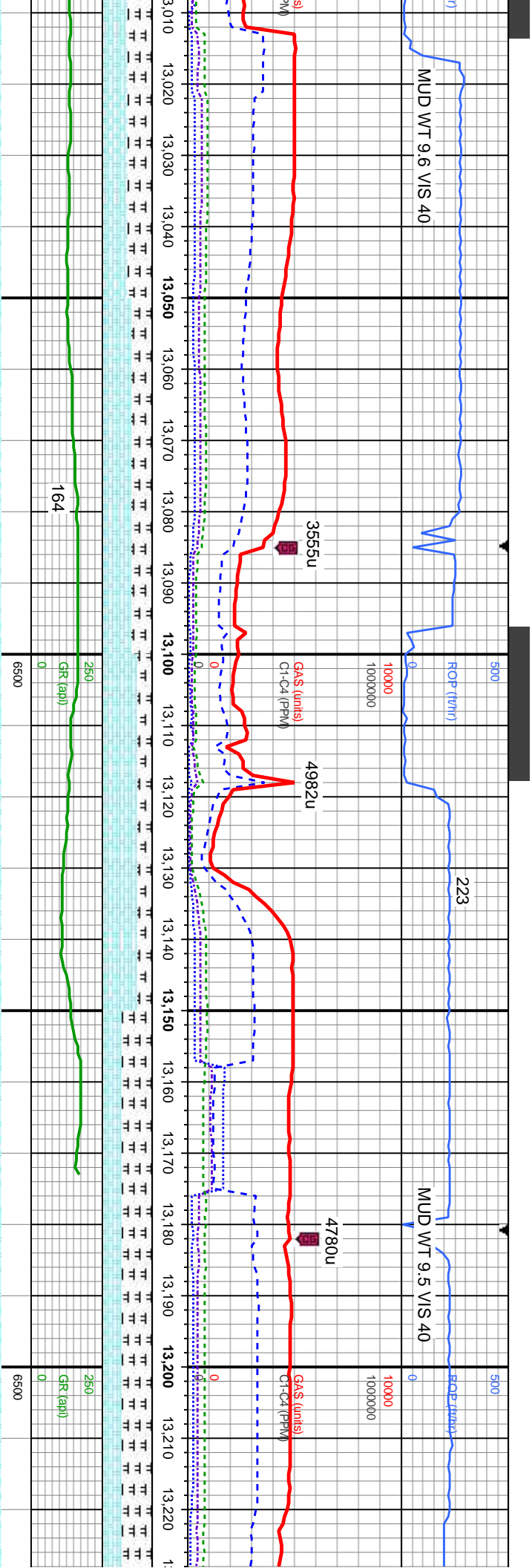












MD: 13,019'  
TVD: 6,693.06'  
Inclination: 91.76°  
Azimuth: 269.17°  
VS: 6,748.09'

60% CHK: lt-med gy brn, sl mot, sft-mod  
60% CHK: lt-med gy brn, sl mot, sft-mod  
sft, occ frm, blk-y-sb blk-y, wxy-rthy tex; 50%  
sft, occ frm, blk-y-sb blk-y, wxy-rthy tex; 40%  
MRLST: dk gy-gy brn, mod sft-sl frm, sb  
blk-y-sb ply, silty tex, tr bent, scat cal

MD: 13,114'  
TVD: 6,689.71'  
Inclination: 92.28°  
Azimuth: 268.29°  
VS: 6,842.63'

70% CHK: lt-med gy brn, sl mot, sft-mod sft,  
occ frm, blk-y-sb blk-y, wxy-rthy tex; 30%  
MRLST: dk gy-gy brn, mod sft-sl frm, sb  
blk-y-sb ply, silty tex, abnt bent, scat cal

MD: 13,167'  
TVD: 6,687.32'  
Inclination: 92.9°  
Azimuth: 268.44°  
VS: 6,895.39'

60% MRLST: dk gy-gy brn, mod sft-sl frm,  
sb blk-y-sb ply, silty tex; 40% CHK: lt-med gy  
brn, sl mot, sft-mod sft, occ frm, blk-y-sb  
blk-y, wxy-rthy tex, abnt bent, tr cal

PROJECT  
MD: 13,220'  
TVD: 6,693.06'  
Inclination: 91.76°  
Azimuth: 269.17°  
VS: 6,748.09'



WELLBORE TD @ 13,228' MD 0835 hrs 6/7/2014

Thank you for choosing Columbine Logging Inc.

13,230 13,240 13,250 13,260 13,270 13,280 13,290 13,300

SECTION TO BIT

228'  
84.23'  
n: 92.9°  
268.44°  
6.08'